THE OIL WEEKLY

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The Oil Man's Calendar

JUNE	
22–26	**American Society for Testing Materials, Chalfonte-Haddon Hall, Atlantic City.**
SEPT.	
7–11	**American Chemical Society, Buffalo, New York.**
OCT.	
5– 9	**National Safety Congress and Exposition, Chicago.**
8–10	**Texas Mid-Continent Oil and Gas Association, Dallas, Texas.**
12–14	**American Society of Mechanical Engineers, Fall Meeting, Rochester, New York.**
25–29	**National Lubricating Grease Institute, New Orleans.**
NOV.	
9–13	**American Petroleum Institute, Stevens Hotel, Chicago.**
16–18	**American Institute of Chemical Engineers, Netherlands Plaza Hotel, Cincinnati.**
17–21	**National Chemical Exposition and Industrial Conference, American Chemical Society, Stevens Hotel, Chicago.**

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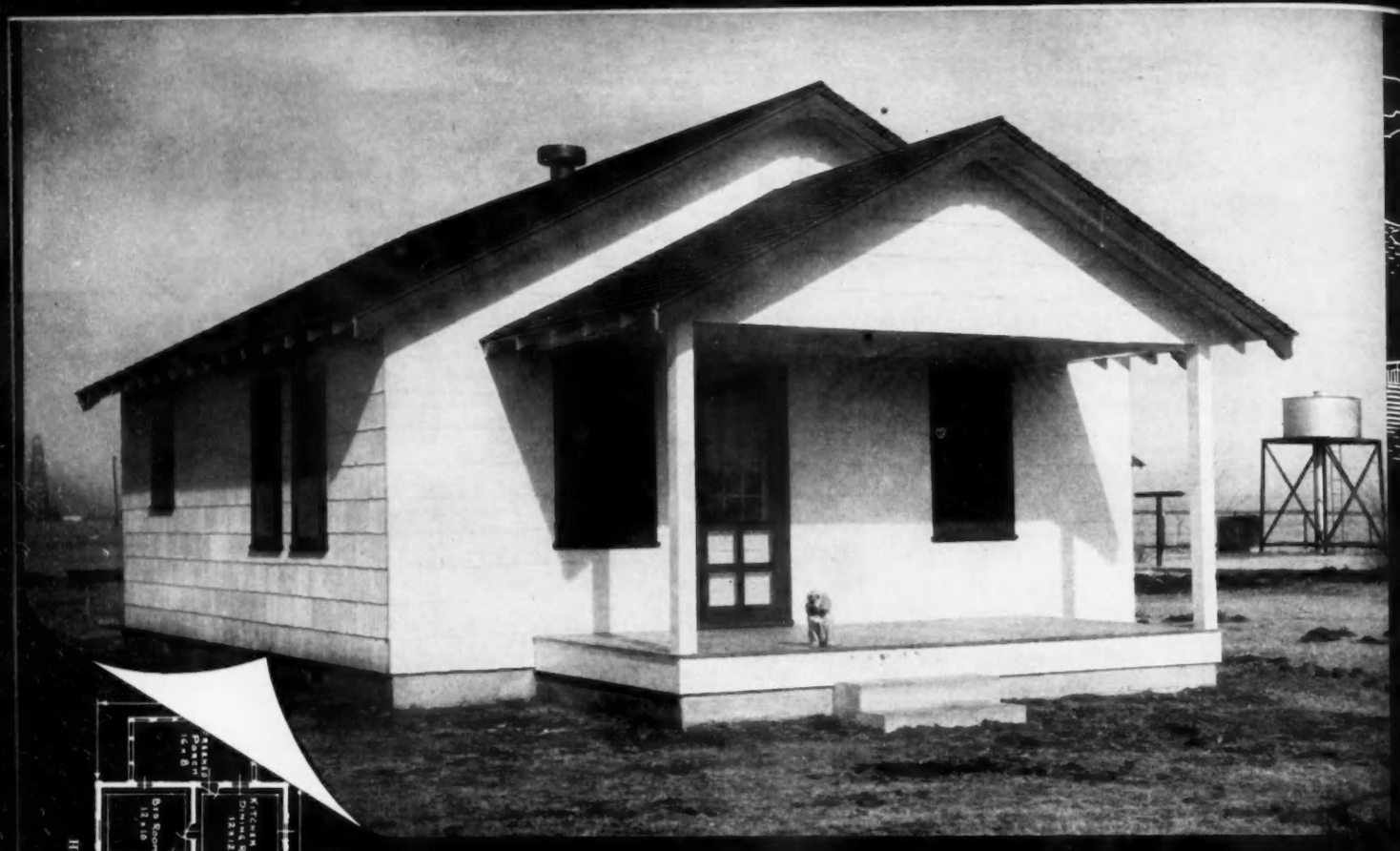

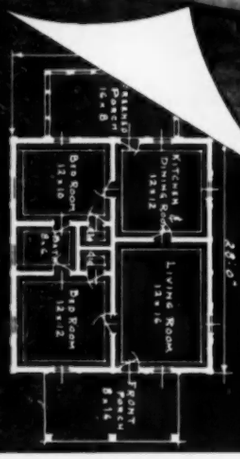

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The Changing Panorama

Venezuela Has Big Steel Scrap Pile

HOW would be a good time to clean out the scrap steel in the oil fields of Venezuela and put it to work in the steel manufacturing program of the United States. While no known survey has been made of the volume of junked oil field equipment in Venezuela, estimates run into the thousands of tons. Most of it is near tidewater, and only boats to move it appear a physical handicap.

The laws of Venezuela for years have prohibited export of scrap, under the thought that some day the country might have a steel manufacturing business of its own; but prospects for such an industry are dim today and the need for scrap steel in the United States is urgent. If the United States government would make the proper representations to Venezuela, the latter government probably would be glad to cooperate and permit the shipping of the scrap during the present emergency. We suspect that the money which could be realized from the sale of the scrap would be most welcome to Venezuela.

The principal difficulty lies in the fact that the department of the United States government which needs the steel scrap most urgently is not the department which officially can make the request for Venezuela scrap. The State Department should discuss the situation with the Venezuela government, but the War Production Board is the agency which realizes the vital need. A little cooperation between the two departments might put Venezuela scrap steel to work in the war.

Let's Tie These Cats' Tails Together!

CLOSER cooperation between OPC and the Texas Railroad Commission appear likely. E. DeGolyer, assistant deputy Coordinator for OPC, conferred in Austin with Railroad Commission members Culberson and Thompson last week on the question of Texas' production rates. It was agreed that an OPC representative, familiar with its method of calculating allocations, would come to Austin and inspect the commission's figures.

There was a possibility that this official might remain in Austin to bring closer cooperation between the commission and OPC. A permanent OPC representative at Austin might save many trips to Washington from commission members and representatives, and with Texas producing one-third of the nation's oil such arrangement would not seem out of place. Whether the commission and OPC representative could "live together" without quarreling was still doubtful.

Here Are a Few Whys And Wherefores

HERE are a few briefs extracted from information releases by OPA on the Eastern gasoline shortage and rationing situation:

" . . . before Pearl Harbor a tanker left the Gulf Coast for the Eastern Seaboard every 80 minutes. In its tanks on every voyage East were some 83,000 barrels of petroleum or petroleum products.

" . . . Eastern petroleum consumption during the first three months of 1942 was about 13 percent higher than for that period last year.

" . . . War devours fuel on a grand scale—as it devours metals, and machines and men.

" . . . A single destroyer cruising a thousand miles and back at 15 knots will eat up 1700 barrels of oil and when in combat, hurtling along at 30 knots plus, she will consume four times as much.

" . . . Every day (along the Eastern Seaboard) hundreds of intercepter planes take off in their job of guarding the skies above our homes. These flights last several hours. Always there are at least three planes in each flight, ordinarily the number of planes will range from 9 to 18—usually two-motored craft. Now each of these motors consumes from 30 to 35 gallons of gasoline per engine on average flights, all of it, of course, high test.

" . . . Army planes in combat will use a hundred gallons of gasoline per hour per engine; a four motor flying fortress gets an hour's flying for every 400 gallons of gasoline it burns.

" . . . A trainer plane will burn up about 50 gallons of gas an hour. It takes about 250 hours to train a pilot—or 12,500 gallons of high test gasoline."

"Bath Tub Rubber" Is Latest Suggestion

IF SOME of the politicos at Washington, who have recently accused the oil industry of indifference to the nation's rubber plight, could only look behind the scenes in oil companies' offices, they would find that of all the subjects on which oil company executives are now cudgelling their brains, rubber is foremost—even ahead of transportation and the transportation worries have not been small.

We get the impression from conversations with executives, that they are pretty well unified in the opinion that 1943 will see the production of 300,000 tons of synthetic rubber, and that 1944 will see 700,000 tons production. From a long range standpoint they say that the problem will be solved in a very satisfactory manner—but the short range picture is what they are worrying about.

Any process which has a chance of helping out in the immediate emergency gets their full attention. As a result they are being told of this process and that, most of which contain nothing new. For instance, there is a Polish process about which official Washington has been talking. Actually, it is a process involving alcohol—nothing new under the sun, and a process which has some rather long and expensive steps which we have good reason to believe can be avoided under processes now available involving petroleum processes.

This past week we heard a good deal about "bath tub rubber," which, although far more costly per pound and less efficient than

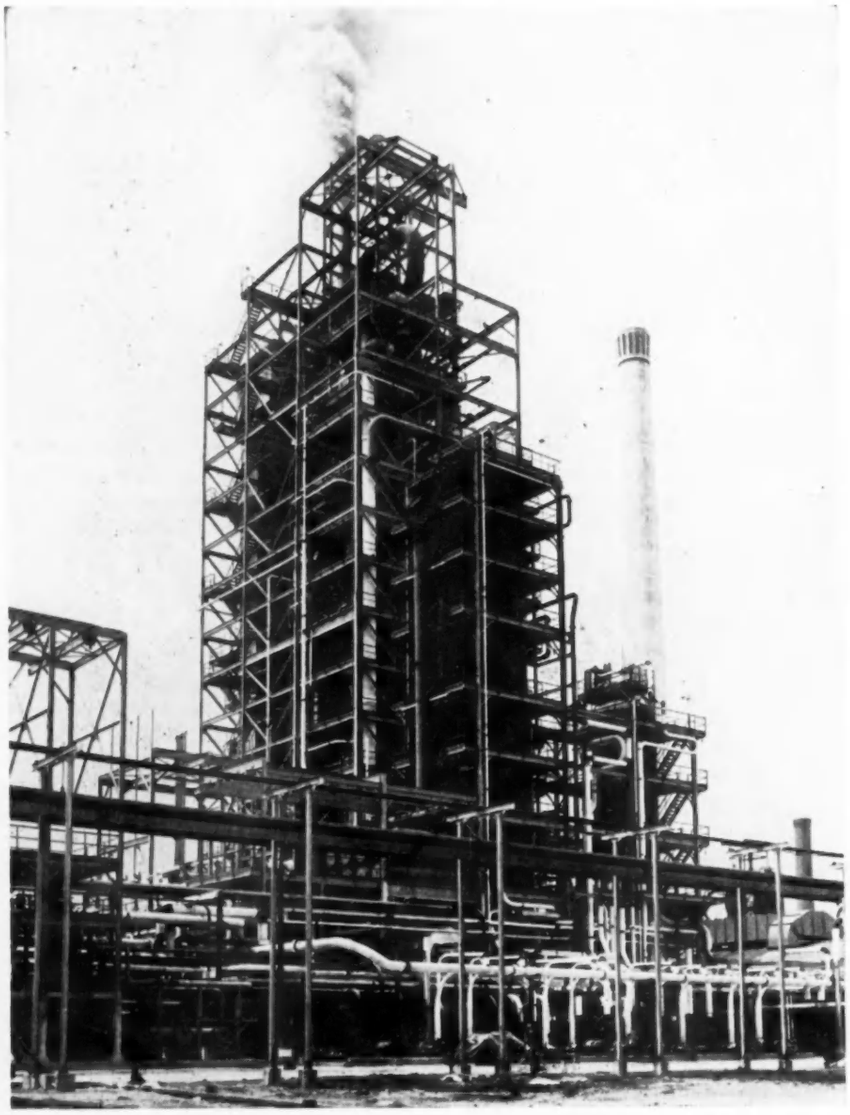
the long range rubber being sought, can be produced in considerable quantities fairly quickly.

Dow's Thiokol also is being studied.

The "bath tub rubber" would involve taking certain refinery gasses generated in cracking, and combining them with another synthetic rubber "ingredient" made from petroleum. It is believed that a much heavier cut of the refinery gases referred to can be taken, and under the urgent necessity now prevailing it is thought that a substantial production of an inferior grade of rubber could be developed within a very short time. It is emphasized, however, that while "bath tub rubber" short circuits some of the expensive installations required in making what we call the "long range product" and although it will be a materially inferior product, its costs will be fairly high—greater than a better product which can be produced at a lesser price but over a considerably longer period of time. Tires made from this "bath tub rubber" would cost more than natural rubber tires cost before the rubber freezing order, and would not give nearly the service—but they would at least keep the wheels of America rolling while plans and plants for a better product, to be used in filling war needs and post war peace-time needs are under way.

The oil industry now believes that the day of natural rubber is over—and the day of synthetic rubber is dawning. Never again in a war or as a result of a cartel will the American people be caught short on rubber. We shall make it ourselves, out of a product of which we have plenty—oil.

STANDARD'S NEW "CAT" CRACKER



This imposing unit, as high as a 20-story building, has been placed in operation at a Standard Oil Company (New Jersey) refinery in the southwestern United States. It will make both 100-octane aviation gasoline and raw materials for synthetic rubber. It is the first of 30 similar fluid-catalytic cracking units under construction, about 20 percent by Standard and the remainder by other companies. Total cost of the construction program is well over $100,000,000. The fluid-catalytic units under construction and due for completion in 1943 will provide, under an improved method of operation recently announced by the Jersey company, a potential annual production of sufficient additional butylenes for 400,000 tons of Buna S rubber and 240,000 tons of Butyl rubber.

Another Department of Interior statistical report "folded up for the duration" last week because of war conditions, the Bureau of Mines announcing suspension of its monthly report on receipts and stocks of crude at refineries.

Will Synthetic Bags Do the Trick?

EXPERIMENTAL tests soon will be conducted on both cotton and synthetic rubber bags to determine if they might prove successful petroleum containers during transportation. When filled these bags could be shipped on box cars, merchant ships, flat cars, trucks or barges, and when empty could be rolled up into compact packages and shipped back with a minimum amount of space required.

Glenn L. Martin Company, airplane manufacturer, is experimenting with synthetic rubber bags which the Pennsylvania Railroad will shortly test in a box car. The textile bag industry is working on a cotton canvas bag to be impregnated with a chemical solution.

Natural gas, as well as oil, is essential to the American war effort. Besides extensive use in manufacturing plants, take the case of a fledgling pilot. The United Gas Log points out that his barracks are comfortably gas-heated. He shaves and bathes by gas-heated water. Every meal he eats is gas-cooked, and perhaps gas-refrigerated. The clothes he wears are indirectly gas-cleaned. His aerial life-saver—his silk parachute—is meticulously gas-dried before being precision packed.

WASHINGTON ROUNDUP

By B. F. LINZ
Washington Correspondent

»

Scrap Rubber Drive Moves to Center Ring

»

Oil to Be Placed Under Special Priority Plan

»

Eastern Gasoline Prices May Get Another Boost

FOLLOWING close on the heels of WPB approval of the first leg of the "big inch" pipe line, OPC last week approved a proposed 8-inch line across Florida and the House of Representatives passed the Mansfield bill for an inland waterway development of which the Florida line would be a major feature.

In passing the bill, the House threw in the Trans-America pipe line proposal in modified form, for good measure, but shaved the expense of the waterway product from $144,000,000 to $80,000,000, then added $13,000,000 for a pipe line from the Mississippi field to the coast.

Of more immediate interest to the oil industry, however, was the initiation of the long-demanded rubber-salvage drive (see page 15). Given the green light by the White House, the oil industry threw itself wholeheartedly into the campaign to collect the scrap rubber of the country, with the equally enthusiastic support of press, radio and public.

Early reports indicated that there will not be much rubber scrap laying around after the drive is over, but officials in Washington refused to guess how much would be collected, nor would they speculate about how much is needed if the country is to escape general gasoline rationing.

OPA and WPB officials appeared to believe that there is little chance of the salvage drive solving any problems and revived talk of requisitioning tires off of non-essential automobiles to give them to war workers.

Testifying before a House committee investigating defense migration, Wendell Lund, director of the WPB labor production division, asserted that the government purchase of tires on non-essential private automobiles will be necessary if war production is to be maintained.

The first carload of rubber to be shipped apparently moved from Houston June 17, according to reports reaching PIWC. The first car loaded and ready to roll out of Washington was filled June 18, with Coordinator Ickes assisting for the benefit of newsreels.

Seeking quick action on the legislation setting up a half-billion dollar corporation to finance and direct the oil industry's war program, the House Committee on Banking and Currency plans to open hearings this week on the Steagall bill, companion measure to the bill introduced in the Senate by Senator Connally of Texas.

☆

PRIORITIES: Although WPB has announced that petroleum will not be placed under the Production Requirements Plan along with most industries, oil's operation under Preference Rating Order P-98 is due to be supplanted July 1—probably by the so-called Special Requirements Plan currently being devised by WPB for industries whose material needs cannot be forecast with accuracy because of swiftly changing conditions. While no definite information regarding the new set-up has yet been made available by either OPC or WPB, vast changes and more stringent restrictions are likely.

Automatic authorizations for drilling when provisions of M-68 are complied with probably will be eliminated. Under the present combination of P-98 and M-68, operators meeting the 40-acre and other requirements have been able to get material for the drilling of wells without any formality, but under the new system it is expected that further restrictions will be imposed on the conservation order and that some kind of certificate basis will be established that will require a rating based on how the projected well fits into the scheme of the industry's war program. Thus, before starting any new test, approval of OPC probably would be necessary regardless of the well's spacing.

Like PRP, SRP probably will provide for the allocation of a fixed amount of steel to each industry operating under it, but having additional provisions for developing sudden additional requirements. Less materials for oil probably will be provided for.

With SRP in operation, P-98 probably would be eliminated entirely. Provisions of Conservation Order M-68 likely will remain in force, with some amendments made to have it conform more closely with the new system whereby material needs are to be obtained.

Oil will be one of but a handful of highly specialized activities to be excluded from the PRP, under which material needs of most industries will be definitely fixed on the basis of information now being correlated by the Census Bureau from questionnaires sent in by individual concerns.

☆

FLORIDA PIPE LINE: Construction of an eight-inch products pipe line across northern Florida, to have an estimated delivery capacity of 35,000 barrels a day, was approved by OPC June 17 a few hours before the House of Representatives took up, for the second time, the Mansfield bill for a $144,000,000 inland waterway develop-

ment, of which a trans-Florida pipe line was a major feature.

The line would be built, with second-hand pipe excavated in Texas, by American Liberty Pipeline Company, which is engaged in negotiations with Reconstruction Finance Corporation for the financing of the project. It would extend from Port St. Joe to Jacksonville, where gasoline and other products handled would be transshipped by barges north and south through the Atlantic Intracoastal Waterway to supply the East Coasts of Florida, Georgia and North and South Carolina.

It was pointed out that the Florida project would reduce the drain on the Plantation pipe line south of Greensboro, N. C., and permit pumping of products straight through to that terminus from Baton Rouge, La., to supply the extension which is to be built to the vicinity of Norfolk, Va.

An afternoon of debate on the Mansfield bill resulted in its passage by the House after the adoption of amendments reducing the cost of the project from $144,000,000 to $80,000,000 by making the canal across Florida a lock project instead of sea level; providing for the building of "one or more" pipe lines across Florida instead of the single line originally proposed, and authorizing also a pipe line from Tinsley, Mississippi, to Savannah, Georgia, or Charleston, South Carolina, at an additional cost of $13,000,000.

During the debate on the measure, in which it was charged and hotly denied that the bill was an effort to secure the long-controverted Florida ship canal, Representative Mansfield of Texas explained that the cut in cost could be accomplished by the change in plans for the Florida water link and in elimination of some of the more expensive construction planned for western Florida and Alabama.

Mansfield told the House that it had been contemplated that several pipes be laid in the same trench across Florida, all to be considered as one pipe line but that provision had been made for several lines so as to settle all doubts. If possible, he said, two or three 10-inch lines should be added to the 8-inch line approved by OPC, which would provide for the transportation of nearly 200,000 barrels a day.

The proposal for the Mississippi-East Coast pipe line was offered by Representative Rivers of South Carolina, and comprises in part the project originally pressed by Trans-American Pipeline Company, which was rejected by WPB and Office of Defense Transportation. It was accepted by the House in the face of suggestions that it might be found impossible to get the pipe, although it was suggested it could be built of used pipe dug up in Texas. At his press conference June 18, however, Ickes pointed out that there are a number of projects to be constructed with used pipe and that the supply of such material is not inexhaustible.

Depending on the capacity of the Florida pipe line, the Mansfield bill would provide a supply to the Eastern Seaboard of from 90,000 to 250,000 barrels a day.

☆

PIPE RELOCATIONS: A WPB relocations committee, which is studying the OPC pipe line program, is expected to take action within the next few days on the five projects calling for the digging up of lines in Texas for relocation to supply the East.

The five projects will cost approximately $26,000,000, but only $4,000,000 of this will be for new materials for which WPB has been asked to grant priorities.

☆

RATIONING: Rationed drivers in the Eastern States will be known by the stickers on their windshields under the "pitiless publicity" which is to mark the revamped rationing system to go into effect July 15.

Each car owner will be given a sticker denoting the type of ration book he has secured and the sticker on his windshield will be a blanket invitation to neighbors, enemies and general snoopers to "turn him in" if they think he has secured larger rations than he is entitled to.

☆

ICKES SAYS: The Longview-Salem pipe line is "only half" the line wanted by OPC and is "not going to solve all our troubles." Nor would the whole line, if completed, together with other lines projected, be sufficient to eliminate the need for rationing.

Organization of the corporation which will build the line was under consideration in New York, and as soon as completed actual construction will be put under way, all details of financing having been settled and orders for pipe given. Orders for motors and other material are being negotiated.

Tank car deliveries into District 1 reached a new high during the week ended June 16 with an average of 731,520 barrels a day, topping by nearly 25,000 barrels the previous record of 706,800 barrels. The movement now involves some 56,000 tank cars.

Tank car deliveries to Oregon and Washington have ceased, and that area now is being adequately served by tankers. Storage stocks are being built up pretty well but are not yet filled and when they are, it remains to be seen how many tankers are left in that service. The one-third curtailment will be continued and whether it will be eliminated will depend on the tankers available after the present emergency is met.

Ickes and Davies are conferring with Price Administrator Henderson on the question of compensating companies for the increased costs of transportation, which so far have given rise to losses touching $40,000,000. The group conferred June 15, but reached no concrete conclusions.

The "big-inch" pipe line will be devoted to the transportation of crude oil, despite the need for increasing fuel oil stocks. So far, the suggestion that it be used initially for fuel oil has not been agreed to; probably the use of the line will depend on the situation at the time it is to come into service.

☆

HOT OIL ACT: The Connally Hot Oil Act will become permanent law as a result of the action of the House of Representatives June 15 in passing the measure, already approved by the Senate, and sending it to the White House for signature of the President.

Advised that the bill making the law permanent had been given the unanimous approval of the Interstate and Foreign Commerce Committee, the House showed no inclination to debate the issue, and

the measure was brought up and disposed of in less than one minute.

Enacted initially in 1935, the Connally bill giving Federal support to state authority conservation orders was twice extended. An effort was made some two years ago to translate it into permanent statute but the House rejected the proposal on the ground that the state conservation laws had not yet become sufficiently fixed, although no opposition was raised to extension of the law.

☆

PRICE CEILINGS: High-cost producers of aviation gasoline and synthetic rubber and their constituents are to be given a place in the war effort under orders issued by OPA removing ceiling prices in an effort to spur expansion of production.

Specifically, both the petroleum price schedule and the general maximum price regulation were amended to exempt from control: (1) Aviation gasoline of 91 octane rating or higher; (2) Components of aviation gasoline, including alkulate, neohexane, iso-octane, hydrocedimers, isomate, and hot acid octanes, iso-pentane, iso-butane, normal butane and butylenes; and aromatic hydrocarbons and base stocks or fractions thereof; (3) Synthetic rubber of the butadiene-styrene Copolymer, parbunan, neoprene, thiokol, butyl, keroseal, flammenol and acrysol types; (4) Components of synthetic rubber, including butadiene and styrene; all hydrocarbons and petroleum fractions used in the manufacture of butadiene and styrene, including ethylene, propylene, butylene, iso-butylene, propane, butane and iso-butane; hydrogen, acetaldehyde, acetylene, vinylacetylene, vinyl chloride, vinyl acetate, sebacate esters, phthalate esters, tricresyl phosphate, hydrochloric acid, calcium carbide, ethylene dichloride, dichlorethyl ether, sodium polysulphide, butylene glycol, and acrylonitrile; (5) Toluene manufactured from petroleum; (6) Base stocks from which toluene is to be extracted, and selected charging stocks to be processed for the synthesis of toluene.

It was explained by the Price Administration that the order was based on requests from other Government agencies for assistance in furthering the production of high cost "marginal" plants which could not produce these military specialties under price ceilings.

"Synthetic rubber and aviation gasoline are strategic and critical materials essential for this country's successful prosecution of the war," it was stated in the order. "The supply and requirements situation is such, with respect to both of these commodities, that marginal and uneconomic sources of supply must be utilized to the fullest possible extent. Attempts are being made to create new industries, upon which victory is in no small measure dependent. In order to permit complete price flexibility during the formative stages of these industries, it is accordingly deemed advisable to exempt from the general maximum price regulation, for the present at least, synthetic rubber and aviation gasoline of 91 octane rating or higher, and their constituents when sold for use in the manufacture of such commodities.

"The same considerations apply to toluene manufactured from petroleum which had not been produced previously in large quantities but is now in very great demand for the production of high explosives for war purposes."

☆

PRICES: Reports were current over the week-end that OPA was about to provide another price increase for gasoline in the Eastern States to offset advances in costs of transportation.

The price administration has had the situation under study for some time and was said to be nearing a decision.

It was rumored that the increase might be as high as three cents, but in informed circles it was said that two cents a gallon probably would be nearer the mark, with an increase of possibly two cents on distillates and another 20 cents a barrel on bunker C.

These increases, it was explained, would lead to a larger movement into the eastern area from District 2 and, it is estimated, would put the transportation pool on its feet. Something over $60,000,000 a year would be secured under the increases, it was figured.

Meanwhile, talk of subsidies as a means of protecting companies placed under financial burdens by the war was revived at the Capitol where Senator Prentiss Brown of Michigan said he would confer this week with Price Administrator Henderson and Secretary of Commerce Jones on a bill designed to permit the government to help finance the production and distribution of certain vital commodities, including gasoline, that otherwise could not be sold in some areas at a profit.

The Senate refused to act on a subsidy proposal May 27, but indications at the time were that its position was more because of the "half baked" plan submitted than because of opposition to government relief for distressed industries. Brown declared that it has become "imperative" that an attempt be made to secure Congressional approval of some authority for subsidy payments, even though restricted. He pointed particularly to the oil and coal industries, hard hit by the failure of water transportation, but said there were others, too, which required assistance.

☆

ALLOWABLES: OPC recommendations for July production were due to be issued over the week-end, the most reliable information obtainable being that they would provide for a 200,000-barrel increase in daily output as a result of improvement in overland transportation.

☆

HYDROGENATION: Development of hydrogenation of coal to prevent the occurrence in oil of the situation we now face in rubber was urged upon a House Mines and Mining Subcommittee June 17 by Dr. A. C. Fieldner, chief of the coal division of the Bureau of Mines, and Dr. A. W. Gauger, director of mineral industries research at the Pennsylvania State College.

There was some doubt, however, whether hydrogenation offered any merits as an emergency measure, particularly since it was admitted it would not provide certain specialized products, such as high-octane aviation gasoline, although it does provide good diesel oil and certain other products.

Dr. Fieldner told the subcommittee that there are two direct processes for hydrogenation, both in use in Germany, and that there

also are by-product methods of producing oil from coal.

While, because of the nearness of the major coal-producing areas, hydrogenation could provide a means of supplying much of the oil demand of the East Coast states, the two experts agreed it could be done only at great expense and said there is some doubt whether the cost of making oil from coal ever could be reduced to the levels achieved by the petroleum refineries.

Gustav Egloff, director of research for Universal Oil Products Company, Chicago, told the subcommittee that Germany "must be in desperate straits" for lack of oil and gasoline and every effort should be made by the United Nations to prevent her from replenishing her supplies.

☆

PATENTS: All persons in the oil industry claiming any interest in patents or patent applications now or formerly owned by nationals of any foreign countries other than the American Republics, the British Commonwealth of Nations and Russia will be required to report their interest, including any license agreements or claims of ownership, by August 15, under orders issued June 19 by Alien Property Custodian Leo T. Crowley.

Reports must be made on Form APC-2, which will be available on and after June 29 at the Washington and Chicago offices of the custodian. Crowley explained that the purposes of the order are to check and describe enemy-owned patents and interests in patents to protect the rights of American citizens therein and to obtain information which will aid in the administration of patents seized by the alien custodian.

☆

STANDARD FLAYED: Standard Oil of California, last week felt the Senatorial heat when Senator Truman of Missouri, chairman of the Special Committee investigating the National Defense Program, submitted a report charging that the California company had sought to use the Washington-Oregon transportation shortage to improve its own position.

Truman made public correspondence between Coordinator Ickes and H. D. Collier, president of the company, and Hugh A. Fulton, chief counsel of the committee; a telegram from the last to Collier, and Collier's reply, all dealing with the alleged refusal of Standard of California to comply with OPC recommendations for the pooling of products and transportation.

In his letter to Collier, Ickes charged the refusal of the company to follow OPC Recommendations 11 and 29 adversely affected the whole effort to keep supplies moving to the Pacific Northwest, and in his letter to Fulton he cited the results of an investigation by Dr. John W. Frey, director of marketing, regarding loans of products to Maxwell Petroleum Corporation of Tacoma, Washington, which had a contract with Douglas Oil & Refining Company, Los Angeles.

"Dr. Frey's report," Ickes wrote, "leaves no room for doubt that up until very recently the conduct of Standard of California in relation to the war effort of the petroleum industry and the effort of my office has been anything but helpful. * * *

"Apparently this Standard company saw in the wartime situation what it believed to be an opportunity to use its superior physical and economic resources to improve its sales position at the expense of its competitors, who were less fortunately situated. Both the Deputy Coordinator and I have from the very beginning taken the firm position that it would be our aim, insofar as it should prove possible, to have the operations of the petroleum industry so conducted that the burdens of the war would be shared equally by large and small alike and no company permitted, by virtue of wartime conditions, to improve its position at the expense of its competitors."

Finally, he said, "as a result of constant pressure" from OPC and members of the west coast industry committees, Standard "appears to have demonstrated a somewhat more cooperative attitude.

"Certainly," Ickes commented, "it has come a long way since that time late last fall when, as reported to my office by the chairman of the industry marketing committee and two of its members, the Standard representative on such committee flatly stated that it was his view that the committee should sit passively by awaiting the recommendations of the Petroleum Coordinator and thereafter fight them."

In his telegram to Collier, the documents released by Truman showed, Fulton asked whether the company was prepared to give "unqualified acceptance" to the request of OPC for collaboration, and in reply Collier gave such acceptance, but challenged Ickes' criticisms of the company's conduct.

☆

APPOINTMENTS: Appointment of E. DeGolyer as an assistant deputy petroleum coordinator was announced June 18 by OPC, with Ickes declaring at a press conference that he was "very happy" to have a man of DeGolyer's attainments and abilities in that position.

DeGolyer is the second man to be made an assistant deputy under Davies, a similar position having been created for Robert E. Allen some weeks ago.

The new assistant deputy has been serving OPC since last July as director of conservation, a position which has not yet been filled.

E. Holley Poe, formerly secretary of the natural gas section of the American Gas Association, has been appointed director of the recently-created natural gas and natural gasoline division of OPC.

Poe has been associated with the natural gas and natural gasoline industries for 24 years, joining the staff of Tidal Oil Company (now Tide Water Associated Oil Company) in 1918, later becoming associated with Tiger Mountain Oil Company. Later he went to Central States Power and Light Company and became an official of the gas association in 1937.

The OPC division is concerned with all problems involved in the production of natural gas, the production of natural gasoline and the associated hydrocarbons used in the manufacture of war products, it was explained by Deputy Coordinator Davies in announcing Poe's appointment. In cooperation with the industry it will formulate plans and programs designed to assure the discovery and production of an adequate quantity of natural gas and natural gasoline to meet requirements for components of 100-octane aviation gasoline, synthetic rubber and toluene.

Oil Industry in High Gear On Scrap Rubber Drive

EXCEPTIONALLY well-situated and well-equipped for the job, the oil industry has ably shouldered the responsibility of conducting the intensive national drive for scrap rubber that was ordered by President Roosevelt.

Vast quantities of discarded rubber goods already had been collected through the service stations of the country at the end of the first week of the June 15-June 30 campaign, and at that time there were high hopes for results in the second and final week, as the nation had been made fully aware of the importance of the drive, while the industry had gained experience that promised to make its efforts effective in the remaining days of the campaign.

The industry's main responsibility is that of purchasing and channeling to the government the discarded rubber goods from millions of homes and farms and from factories, warehouses, stores and offices. Accordingly, the industry has put its energies and facilities into the campaign on a grand scale. Its executives had a prominent role in conceiving and planning the drive, and they have enthusiastically watched and directed the execution of the plans. Oil company employes in the public relations and sales departments have worked hard, seeking the rubber offerings and cooperation of the public and of industries and commercial establishments. Service station men of all classifications, whether agents or employes of oil companies or independent dealers, have devoted much of their time to weighing in and buying the articles of rubber brought in by millions of persons. Transportation departments have assigned trucks and truck drivers to the collection of the scrap rubber from service stations, factories, and farms. Supplying companies offered financial guarantee to station operators, and provided funds when needed. Accounting departments have been called upon for the keeping of records on the collections and purchases. Men of the industry who comprise the committees set up under the Office of Petroleum Coordinator are being depended upon for important coordination work.

Oil industry workers throughout the country have taken a personal interest in the success of the rubber scrap drive, and their influence has been a significant factor in promoting public cooperation, aside from the advertising and publicity provided for the campaign.

Besides the time and efforts of its workers, the oil industry is contributing large sums of cash toward bringing in the rubber. Substantial unrecoverable expense is involved in putting on the drive and in handling the rubber, as any profit from sales of the scrap to the government's Rubber Reserve Company, over and above sums actually paid out for the scrap, will be turned over in equal shares to the U. S. O., the Army Relief, the Navy Relief, and the Red Cross.

Furthermore, the oil industry is participating prominently in the collection of rubber scrap from its own properties, putting into the roundup large quantities combed from all of its major divisions, as in the oil fields, at the refineries, at pipe line pump stations and terminals, at bulk plants, at service stations and in offices. The industry is a heavy user of rubber goods, and it is therefore finding great quantities of scrap.

Oil field equipment manufacturers and suppliers also are ferreting out large accumulations of the critically needed material.

Drive Within Industry

In the industry's own rubber salvage campaign, remarkably successful results are being reported in all departments and in all sections of the country.

Employes in Richfield Oil Corporation's home office building at Los Angeles collected 2000 pounds of rubber, according to Charles S.

Typical of the collection speed and whole-hearted public support given the scrap rubber campaign sponsored by the oil industry is the above carload of between 35,000 and 40,000 pounds, which left Houston the third day of the drive. The shipment included everything from old tires and tubes to teething rings, toys and hot water bottles that were collected at Humble Oil & Refining Company filling stations in the city. Other companies and other cities had done equally well.

Jones, president. He reported that employes sacrificed worn rubber cushions they had been sitting on, as well as such items as rubber ash trays.

In the oil fields, particularly rich accumulations of rubber goods are being found, with workers exercising ingenuity in discovering items discarded or no longer serviceable.

From Corsicana, Texas, R. B. McGuire, of Tide Water Associated Oil Company wrote to this publication, reporting on results he had accomplished, and suggesting that similar success might be obtained in certain other areas:

"As stuffing box rubbers are made of the highest grade of rubber," McGuire wrote, "it occurred to the writer several months ago that we should save all discarded stuffing box rubbers and see what could be salvaged from under 10 old style wooden derrick floors without too much effort. This resulted in about 100 pounds or more of so-called Grade "A" stuffing box rubbers that had accumulated over a period of years.

"In practically all of the old fields similar to Powell and Mexia, it is very probable that with no special effort a surprising amount of this type of rubber is available.

"This campaign was started," he added, "in all operations in which I am connected, and I believe will show similar results in all large water producing fields where they use much of this type of rubbers."

From various fields there were reports that comparatively large amounts of rubbers were furnished by worn drill pipe protectors. On the drill pipe used in a deep well, protectors involve well over a thousand pounds of rubber, it is estimated. Supply companies also have provided worn and obsolete drill pipe proetctors from their yards. To some extent, rubber protectors are used also on sucker rods, particularly in crooked holes, and from such strings unserviceable protectors are being salvaged.

Aside from the above mentioned articles, various other rubber items are used extensively by drilling and production companies, including the following:

1. Rotary and mud suction hoses.
2. Swab cups.
3. Wire line guides.
4. Pipe and sucker rod wipers.
5. Insulation from wire and cables.
6. Rubber from packers.
7. Rod and tubing strippers and wire line oil savers.
8. Gaskets and packing rubber.
9. Belting; V-belts, transmission belts.
10. Mud pump sleeves and rings.

Some Things Rubber Scrap Will Do

A 50-foot length of old garden hose will furnish rubber equivalent to that in a Navy inflatable life raft.

★ ★ ★

Two old tires equal one new tire for an Army Jeep.

★ ★ ★

Two old inner tubes will make 3 heavy Army gas masks.

★ ★ ★

Three discarded rubbers furnish enough reclaim for one Army overshoe.

★ ★ ★

One hot water bottle provides enough rubber for 2 yards of hospital sheeting.

★ ★ ★

Rubber equivalent to that in 100 tires will line a bullet-sealing gasoline tank of a big bomber.

★ ★ ★

Three quarters of a ton of rubber is enough for making a 28-ton tank.

★ ★ ★

Rubber equivalent to that in 13,000 tires constitutes enough for building a battleship.

Early Results

The national rubber collection drive got off to starts of varying speeds in the various sections of the country, with preliminary reports indicating that more scrap was being turned in in the West, where high freight rates to reclaiming plants made the salvaging of old tires and other scrap expensive, than in the East, where used tires were in greater demand and where reclaiming plants were comparatively near.

Also, it was found, the rural areas were more prolific of old rubber than the cities, where efficient trash collection made easy the disposition of materials no longer useful to the owner and where, also, there were thriving junk businesses ready to buy material.

On the whole, Chairman Boyd of the PIWC expressed satisfaction over early returns, but said no tabulation of collections would be made public until after the first week of the drive, and that the final report would be issued about July 5. But the first few days saw large marketers reporting collection of a million pounds each in several individual states.

There was no question but that the oil industry, as rubber drive sponsor, waded into the campaign with both feet—first turning in its rubber boots—and that every member, from the operator of the crossroads one-pump station to the president of the largest company, was fully aware of the grave responsibilities which President Roosevelt had imposed upon the oil men.

Government officials all along the line were giving the industry not only their moral but their physical support, a number of them going on the radio in the interest of the drive. The governors of the states also made known quickly their whole-hearted collaboration, and the public appeared to have entered into the campaign enthusiastically, its desire to help being limited only by the difficulty of finding rubber products which could be tossed into the pot.

PIWC engaged in an extensive publicity program to keep interest in the plan at top pitch, and Boyd's publicity men proved their right to that title by their proficiency in finding new "angles" for a series of releases distributed daily to the Washington corps of newspapermen. Aimed to hit the interest of communities all over the country, many of their stories were carried by press association and private wire to newspapers in every section.

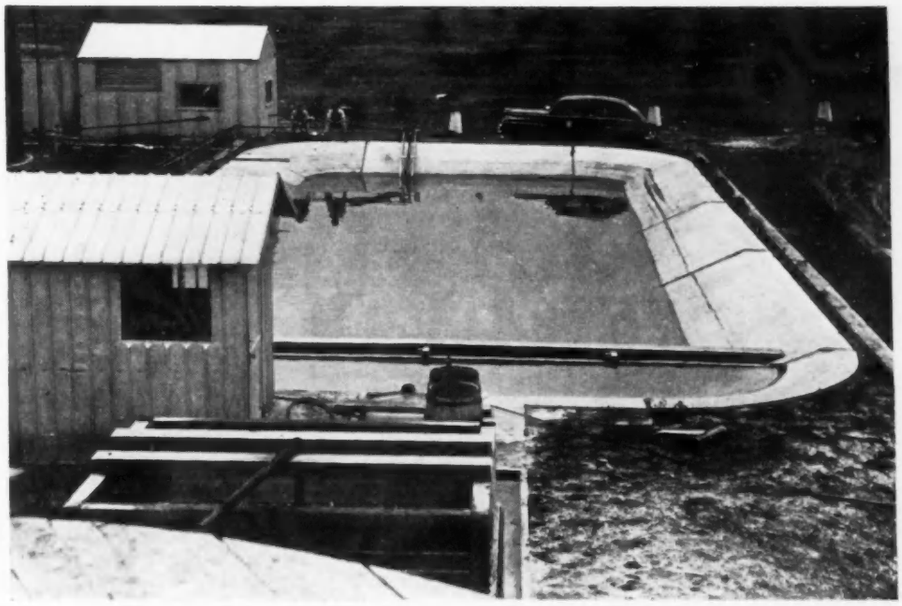
Boyd offered as a prize "a ten-gallon hat with a synthetic rubber sweat band" to the state industry drive chairman whose organization gathers the most rubber per capita during the drive.

"Right now the favorite looks like either Minnesota or Montana, although it's still far too early to make definite predictions," Boyd said.

The contest idea was started by Utah with a general challenge to the other states in the Union. Most of the states accepted quickly and intimated their willingness to play for "fun, marbles or money."

"The campaign is doing very satisfactorily," Coordinator Ickes said June 18.

"Of course, we had an admirable organization—you could have taken six months to build up an organization and you would not have what we have here, with the filling stations and the oil industry all over the country right back of it, and we had right here in Washington the necessary machinery in the Petroleum Industry War Council."



Concrete basin has capacity of 1350 barrels, and is equipped for final purification prior to filtering. Nearest end is separated from remainder of basin to provide a settling tank containing floc. Clean water flows over spillway, and enters basin, while solids are trapped in settling tank.

Controlled Water Injection Sustains Reservoir Energy

By GORDON B. NICHOLSON, Staff Writer

PLYMOUTH Oil Company, by controlled injection of water into one of several producing sands in the Plymouth field of San Patricio County, South Texas, maintains constant bottom-hole pressure, and calculates sustaining a driving force which will be of economical benefit in receiving greatest ultimate recovery from the reservoir. Volumetric withdrawals are replaced systematically by forcing salt water into the bottom of the sand section, with an additional amount injected to assure minimum pressure fluctuation.

The company produces 13 wells from the Plymouth sand, which is found at an average depth of 5500 feet. The formation is one of several producing horizons in the field, is relatively small in extent, comprising only about 320 acres, and is lenticular, with a tendency to pinch out toward the flanks in all directions. When first discovered, it was evident that the formation had neither water nor gas drive, and injection of gas was soon started to relieve a rapid bottom-hole-pressure drop and to develop some degree of gas drive, with object of procuring the greatest amount of oil. Realizing relative impotence of gas drive as the sole motivating factor, the operators made plans for creating an opposing water drive to force up the oil and prevent drying the sand with resultant sacrifice of recovery.

Injection water is obtained from wells in the field producing from other formations; and careful chemical and mechanical treatment is given it to remove undesirable elements which seal face of receiving sand or add to corrosion of equipment, assuring highest operating efficiency.

Salt water produced from sand at 5800 feet is used for injection, being obtained from gunbarrels of three tank batteries serving wells producing from that formation. With injection of all water produced by these wells, flooding provides a dual purpose, as salt-water disposal is also effected, with construction of evaporating pits or other disposal facilities unnecessary. By staggering delivery of water from batteries to injection system, loads on delivery lines are kept low, permitting use of the simplest, most effective, and least expensive gathering system.

Water, after being drained from tank batteries, is stored temporarily in an open pit. When each battery feeds its water into the injection system, a centrifugal pump located near the pit at the battery is placed in operation, lifting water from the pit and forcing it into the delivery system to reach the injection plant. Automatic controls, regulated by hard rubber floats, on each pump, stop pump action when fluid level is lowered near bottom.

From the three supplying tank batteries, 2-inch lateral lines conduct water to the main 2-inch line which takes water to the injection plant. As delivery wells are staggered to prevent overloading the line, pipes of small capacity are sufficient to carry the volume needed, and all are cement-lined to prevent corrosion by salt water.

Water is pumped directly into a 500-barrel receiving tank, first passing through a small scrubber

Water leaving aerating tower runs down tilted, flat-bottom ditch, made of concrete and having several baffles, giving additional aeration. Drums containing alum, lime, and other chemicals are placed nearby for injection to make floc containing solids.

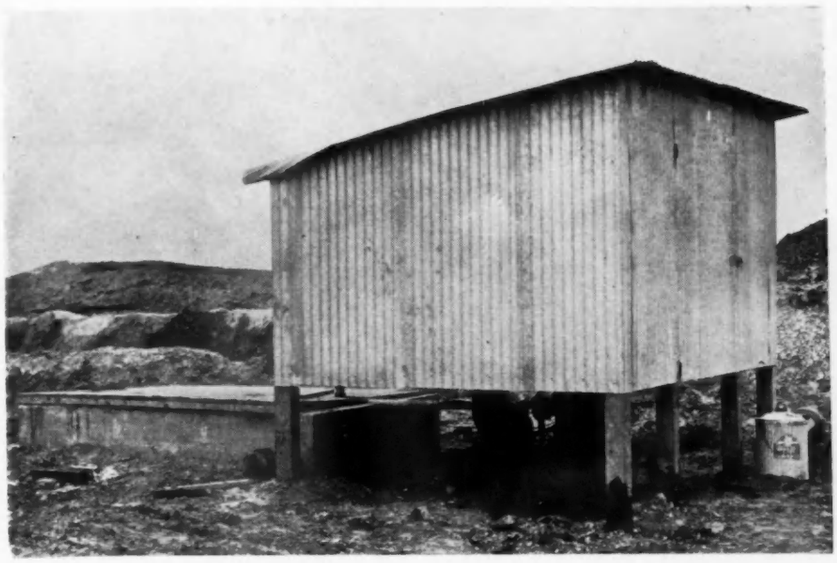
located on the tank deck for removing oil. The scrubber operates on a principle based on differential specific gravities of oil and water, being divided into two sections separated by a raised baffle which allows flow and equalization of fluid columns by passage underneath. Oil gathers in top of the first compartment, water settling to bottom, going under the baffle, then accumulating in the adjacent compartment, where it is metered into the receiving tank. An overflow pipe is connected with the first compartment near the top, and as height of the oil column increases, having less specific gravity than water, its weight is less than weight of the offsetting column of water in the adjacent compartment. As a result, weight equalization lifts the oil column to a greater height than the water column, and its surface stands level with the overflow pipe. Accordingly, through the drain, top oil flows continually from the first compartment, to prevent accumulating more than desirable amount, automatically feeding into a special pit where oil is later gathered.

Water draining from the second compartment flows into the receiving tank, which, like the clean-water tank in which the water is stored later, is made of redwood, untreated and unpainted, and reinforced by tightly-bound lateral steel rods around its circumference.

By the time water reaches this stage, all oil has been removed; and it is then carefully processed to remove solid materials which may later corrode equipment or plug face of the receiving formation. The first step in this procedure involves aeration of water, which process changes iron elements from a ferrous to a ferric state to allow precipitation. An aerating tower is provided near the receiving tank, and water leaving it gravitates through its various shelves, at all times thinned to expose the greatest surface to the air, allowing water to drip quickly in small streams over the shelves.

The aerator sets on the upper

From basin, water passes through pressure filter, and is then stored in clean water tank, ready for injection into formation. This tank, as well as the original tank which receives untreated water from tank batteries, is made of redwood, untreated and unpainted.



Each of the three tank batteries which supply water for flooding is equipped with a centrifugal pump located in a small, corrugated iron house. Water is pumped from pit behind the house, and a float control cuts off pump automatically when fluid level is low.

level of a terraced concrete flooring which forms a flat, nearly-level trough. Terraced structure provides baffle slabs over which water runs slowly, not exceeding ½ inch in depth, and thus a large surface area is exposed to air. At lower end of baffle slabs, the concrete conduit narrows slightly, and still at a gentle tilt, forms a flat-bottom flume, with flow confined between 2-inch concrete curbings on each side. Close to ditch, chemical barrels containing lime, alum, and other chemicals are placed for injection of ingredients into the passing stream of water to provide a floc and cause precipitation of iron, carbonates, and other solids. This action takes place in the principal basin into which the water is next directed.

Upper end of the concrete basin is separated from the remainder by a wooden spillway, forming a small settling pit. Floc, or precipitated solids which form in the flume settle to bottom in the quiescent water; and clean surface water flows over the spillway into the main section of the basin. Floc is removed from bottom of pit frequently to assure entrance of only treated water. The concrete tank has capacity of 1350 barrels.

Water is lifted from the basin through a rubber suction connected to a 2-inch cement-lined pipe served by an auxiliary pump, and is pumped through a pressure filter filled with graduated sand and gravel before being run into clear-water tank of 500-barrel capacity. From the latter tank, water is metered and pumped into the injection well. A pump house located nearby houses a 2½- by 8-inch pump powered by an engine which runs on lease gas. Injection pressures amounting to 1200 pounds are required to force water into the formation, while variations in discharge pressure of the injection pumps are tabulated by a recording meter, and give daily record of amount of water handled.

Inject 600 Barrels of Water Daily

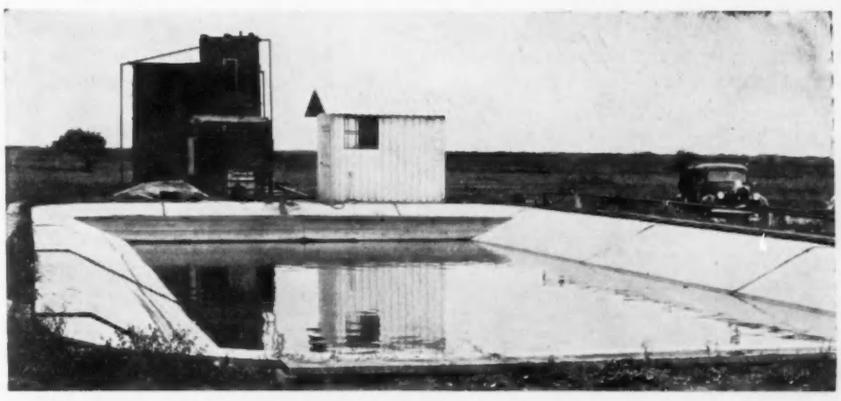
The injection well, Plymouth Oil Company's Welder C-63, is located low on the structure. The well is equipped with 7-inch casing, and 2-inch cement-lined tubing which extends to bottom, and, while originally cased to top of producing sand and screened for production, screen was pulled to permit ready reception of water by the open-face sand. The receiving formation contains some shale and, being thinned on the edges, totals only about 4 feet thick, and accordingly, unusually high pressure is required to inject water in volume. An average of 600 barrels per day is pumped into the formation, representing a slightly higher figure than the daily lease production. Bottom-hole-pressure tests are taken frequently to observe even minute variations, and static reservoir pressure is kept close to 1675 pounds.

No wells on the lease produce water, and all flow naturally. Gas is still being injected into one well located high on the structure, an average of 350,000 cubic feet daily being forced into the single key well. Gas injection was started in October, 1938, and has been continued without cessation in attempting to maintain constant bottom-hole pressure.

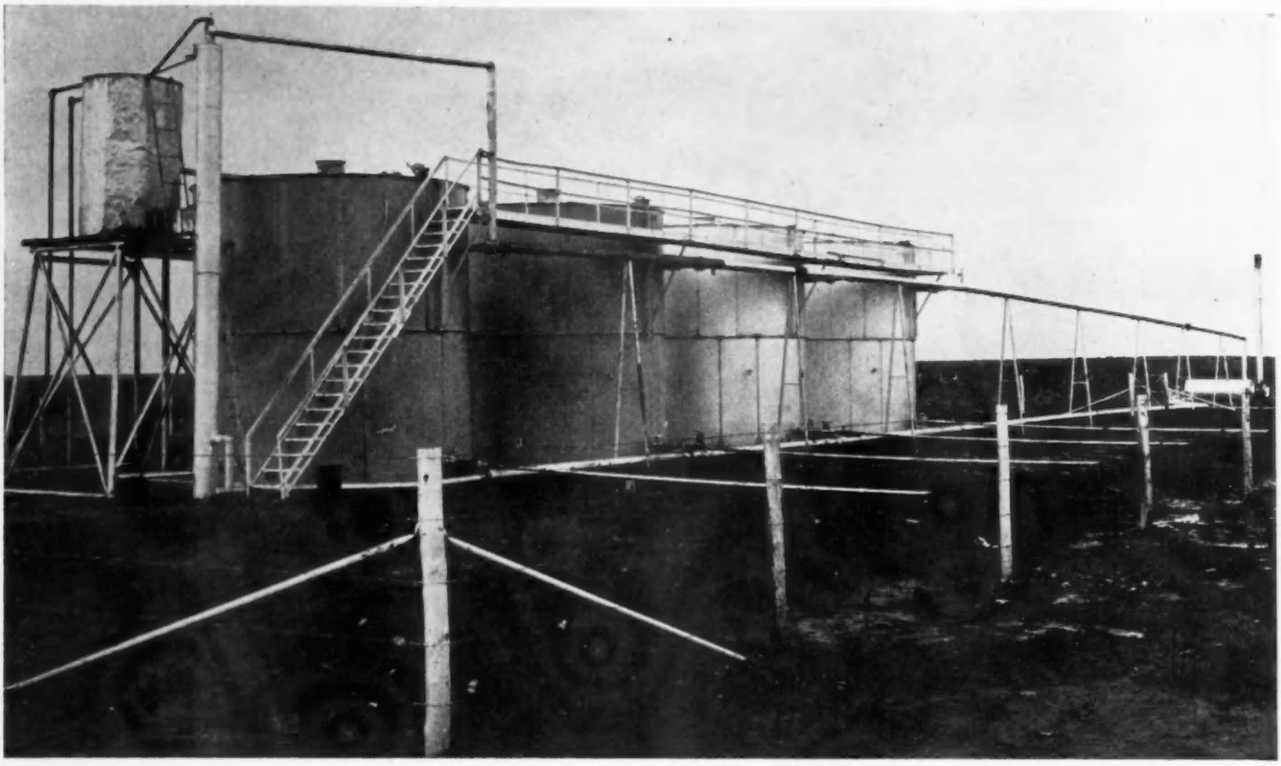
A reserve tank receives excess water from the clean-water tank, and is used in emergencies. The auxiliary pump may be connected with the reserve pit, and provisions for backwashing the filter are made by pumping water from the clear-water pit in reverse direction through the filter and into the reserve pit, then returning to original receiving tank for retreating. Other services performed by the auxiliary pump include emptying tanks, as pumping from mixing or settling pit from either top or bottom, and lifting fluid either from reserve or clear-water pits.

Salt water flooding at Plymouth represents an efficient and inexpensive system.

In addition to maintaining reservoir pressure of the Plymouth sand by water injection, Plymouth Oil Company is using gas injection for the same purpose in another producing formation of the field. This operation will be described in a forthcoming article.



Receiving tank is equipped with special scrubber on deck to remove oil from water, and is located at upper end of concrete basin. After thorough aeration and treatment by chemicals, water is stored temporarily in the basin.



Distilled Water Heating System Overcomes Problem Of Shipping Viscous Oil

By GILBERT M. WILSON, Staff Writer

UTILIZING the thermo-syphon principle of circulating hot water through a closed system, a West Texas operator has installed at one of its tank batteries, an efficient heating arrangement that greatly facilitates the treating and tank-truck shipping of an unusually viscous grade of crude oil.

The oil produced on this particular lease comes from an interval in the Silurian, and incidentally is the only production in West Texas coming from this horizon. The oil, having a gravity of approximately 33 degrees, is of an unusual quality, in that it congeals to an almost solid mass at temperatures below 75° F. At 100° F., however, the viscosity is comparable to that of other oils of the same gravity.

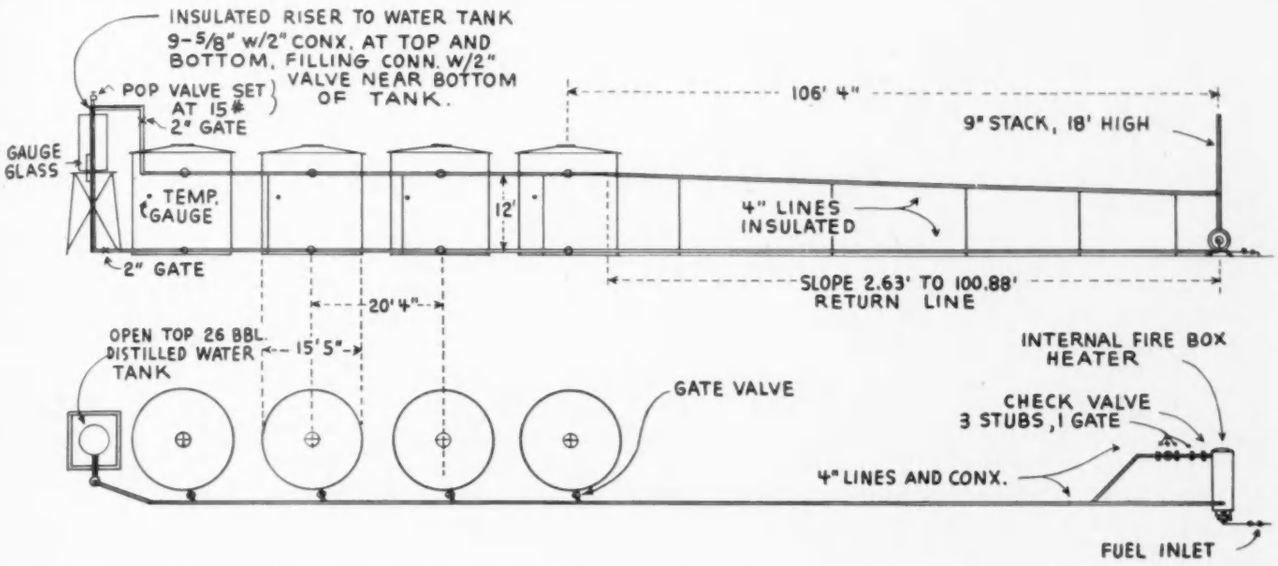
Production coming from the two flowing wells thus far drilled on the property, flows into the battery of four 500-barrel tanks, which, because of the viscous nature of the oil, have been equipped with the distilled water closed-circuit heating system. Since pipe line facilities have not yet been laid to the lease, the oil must be moved by trucks, necessitating heating the oil before it can be shipped.

Each of the tanks contains a heating coil, with a pipe connection extending through the side of the tank to exterior fittings, from both the upper and lower header of each coil. The four tanks are connected together in parallel, the four upper connections being tied together into a single elevated 4-inch line, and the lower connections being connected into a similar ground-level line. These two main lines, heavily insulated and wrapped, extend 100 feet beyond the fourth tank to connect into a small gas-fired internal fire box heater.

Because of the hard water that is characteristic of this, and many other West Texas fields, it was considered more economical to use distilled water in the circulating system in order to eliminate scale and other types of deposits which would otherwise soon clog or restrict the pipes.

The water, which fills the coils, outside lines, and coils of the small heater, on being heated, rises into

Over-all view and diagram of tank battery showing the thermo-syphon heating system. Small elevated tank at left is the make-up supply. Insulated lines, connected in parallel to each tank, extend out to the small heater at at far right.



Plan of tank battery showing thermo-syphon heating system, and the route taken by the distilled water as it travels from heater to tank, then back to heater.

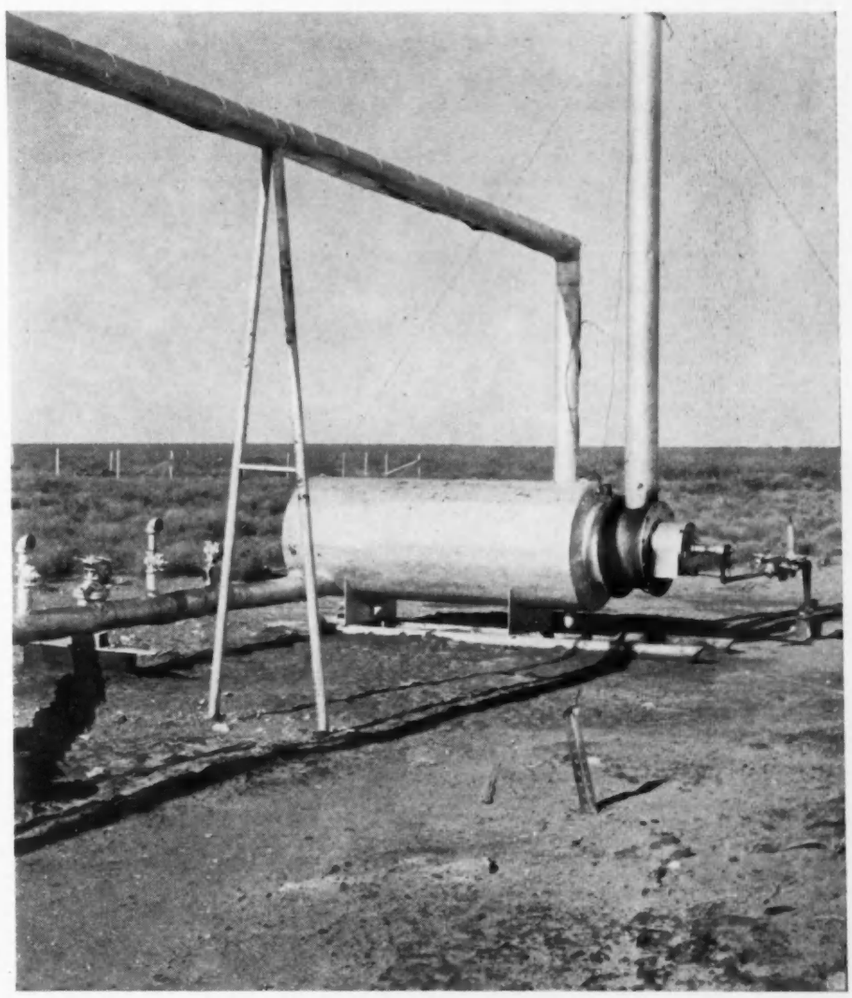
the upper line, circulates through the tank coil and gives up heat to the oil in the tank. The cooled water falls to the bottom of the coil and returns by gravity to the heater, where it is again heated before returning through the tank coils. The return line has a slope of approximately 2½ feet in the 100 feet of travel back to the heater.

The coil in each tank consists of 27 2-inch risers connected together at top and bottom by a 4-inch header. Height of the coil from center to center of the two headers is 12 feet. To facilitate servicing or replacing any or all sections of the coil, the 2-inch vertical sections are connected by quick-acting couplings to 2-inch nipples permanently welded into the headers. The coil assembly rests on 4-inch wooden blocks.

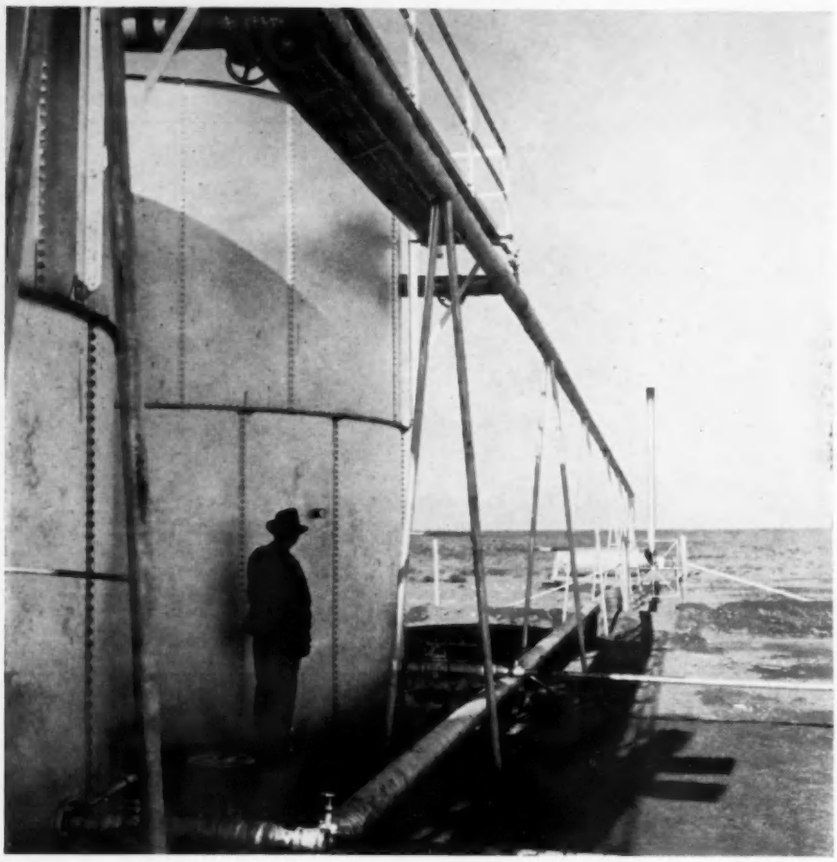
Make-Up Water Supply

Make-up distilled water is supplied to the system by an elevated 26-barrel tank located near the first oil tank, and on the opposite end from the heater. Should pressure in the water system at any time exceed the normal operating hydrostatic pressure of 8 pounds, a relief valve, situated above the make-up tank, and set to pop at 15 pounds, will open, thus preventing any possible damage to the system.

Whenever two, three, or all four of the tanks become filled, the



Distilled water, heated in this direct-fired heater, rises into the upper line, circulates through the tank coils, and on giving up its heat to the oil, returns to the heater through the lower line.

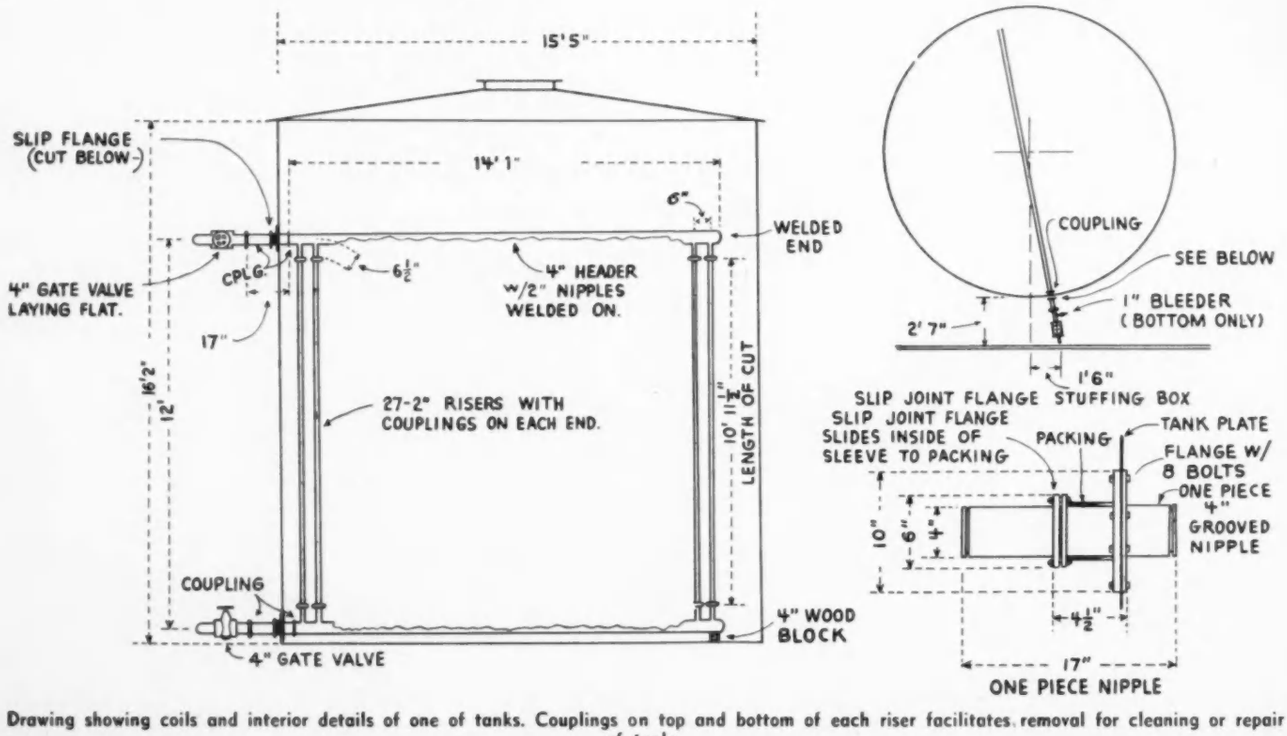


Each tank is equipped with a thermometer on the outside of the tank, permitting a close check on the heating operations preparatory to shipment by tank truck.

boiler is fired up preparatory to trucking out the oil. Ordinarily, the tanks are heated one at a time, the gauger switching the circulating hot water from one tank to another as the trucks empty the treated ones.

By means of a thermostatic control on the heater, a constant water temperature of 195° F. is maintained. With water at this temperature, a 500-barrel tank of oil can be heated through a total rise in temperature of about 100 degrees in 24 hours, or about 70 degrees in 12 hours. Each tank is equipped with a convenient, eye-level thermometer on the outside of the tank shell, providing an accurate check on the oil temperature at all times.

Since production costs are necessarily higher on this lease than on other properties of comparable size, due to the necessity of having to truck the oil, along with the special problems which are presented by this unusual type of oil, a minimum expenditure was essential for the economical handling of the oil. The present installation has given excellent service, and maintenance costs of the battery and circulating system have been exceptionally low, due largely to the use of distilled water in the well-designed set-up.



Drawing showing coils and interior details of one of tanks. Couplings on top and bottom of each riser facilitates removal for cleaning or repair of tanks.

OFFICIAL U. S. NAVY PHOTOGRAPH

THE YANKS ARE COMING . . . *This Time by Air!*

. . . . . WITH BETTER MEN FLYING BETTER PLANES POWERED WITH BETTER OIL!

Yes, the Yanks are on their way . . . by air this time, as well as by sea. And the story will be different when this hard hitting sky army of Uncle Sam goes into full action, thanks to better men, better equipment and better fuel. In appreciation for the part we have been privileged to have in oil for nearly a half century, we can't help but pay due tribute to the latter. In air combat the ability to get there in a hurry and maneuver at uncanny speed counts. Every extra mile per hour in climbing "upstairs," in diving, in zipping around turns, means vital points on the credit side of victory. The ingenuity of American Oil Men has put those extra miles per hour in the fuel tanks of our great army of the air.

THE PARKERSBURG RIG AND REEL CO.

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PARKERSBURG

Selection of Internal Combustion Engines

PART 1—General Considerations

By EMORY N. KEMLOR
Associate Professor of Mechanical Engineering, Purdue University

THE internal combustion engine is one of the most important sources of power in all phases of oil field operations. Because of the many sizes, types and makes of engines available, the purchaser is confronted with a most difficult problem in the selection of an engine for a particular service. While there is possibly one best size and type for a particular service, the purchaser cannot have available the information on which to make this one selection from the hundreds available. Fortunately most problems of this type show little difference in overall costs over a considerable range of selections so that there are probably several equally good engines for a given job. There are, however, a number of factors which the purchaser can evaluate which will insure satisfactory service and these will be discussed in this and the following articles.

In the selection of any piece of equipment, the general principle to be followed is to keep the total cost to a minimum. This total cost includes operating and maintenance costs, investment charges, and any other expenses chargeable to the type or size of equipment selected. These later costs might include expenses or losses involved by shutdowns. Where lost production must be considered or where shutting down of one unit might tie up a plant, lease or pipe line, this cost may become very important. The placing of numerical values on these individual factors may be difficult because of lack of sufficient cost data. Since they are important, they must, however, be evaluated in some manner.

The first step in the selection of any engine requires an evaluation of the operating requirements. Failure to study this part of the problem results in more difficulties and expense than improper design, manufacture, selection or purchasing. There is always a tendency to quibble over design details or a few dollars difference in price and at the same time to "just take a guess" as to the size of engine required. The engineer can save more money and eliminate more difficulties in engine application and operation by carefully determining the requirements than by any other means. While this phase of the problem is not an easy one to evaluate, it is perhaps the most important and deserves more attention than it has been given in the past. In many cases the horsepower, torque or speed range required will limit the types or makes of engines which can be used and will eliminate much of the work of comparison.

While the determination of proper size is a most important step in selection, there are also many other factors which a careful study of operating conditions will clarify. In determining the rating which will be put on an engine, the type of service which it will perform may play a most important part. Conditions which require 24 hour service over a long period of time and where shutdown would impose a severe penalty require very conservative

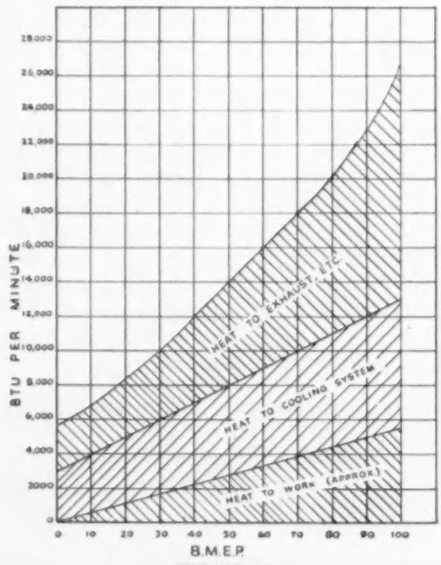


FIGURE 1A
6 x 7-inch, 6-cylinder

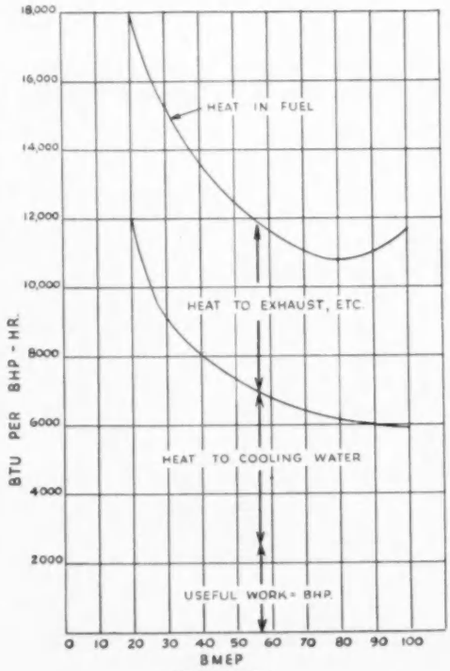
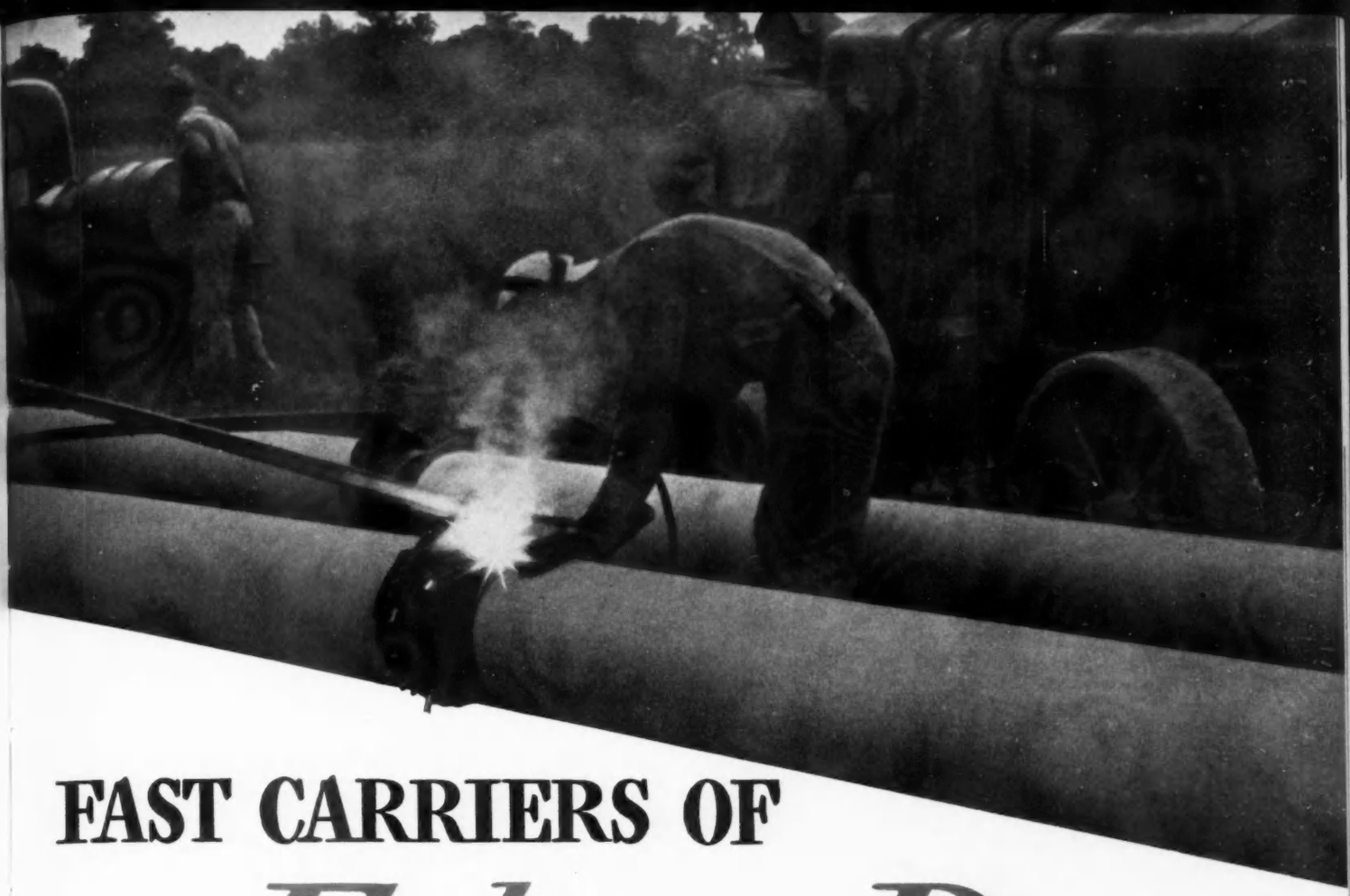


FIGURE 1B



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rating. A service which is intermittent, where a shutdown is not important, and where the overall number of hours of service will be short would indicate a high rating factor in order to keep investment costs down. The type of service may therefore play an important part in the selection method to be used. In one case initial cost alone may be the governing factor while in another the design most likely to give trouble free service may be selected regardless of cost.

The type of repair labor or supervision available and the conditions under which repairs must be made are very important and may decide the type of engine to be purchased. The range of conditions may vary between cases where the engine is to be traded in on a new or reconditioned engine when repairs are required, to the case where a company repair crew is available for the making of the necessary repairs. When continuous service is important, the available supply of repair parts may be very important and the selection of make or type of engine may be decided or limited by the source. The large number of parts necessary to cover any possible repair on many modern engines makes it expensive to stock parts and even the larger companies may not find it economical to carry stocks except in isolated locations.

Another factor which is involved in the selection of type of engine is the class of repairs generally necessary and also the cost of a set of tools required in the making of repairs. Some types of small engines may require several hundred dollars worth of special tools to permit a complete overhaul whereas other designs require a minimum of special tools.

Where mechanics are not available for making repairs such as on temporary pumping installations, on producing properties, etc., and where only inexperienced labor is available for making minor adjustments, the type of supervision available may play a most important part. An engine requiring only a few simple adjustments may give much cheaper service than perhaps a better but more complicated engine. These generally overlooked factors often make a big difference in overall operating costs. Where a mechanic must be sent several miles to make adjustments and minor repairs, the simpler design may give much cheaper operation than a more efficient but more involved design. In a plant the later type engine may be best adapted.

When all the above operating conditions and requirements have been taken into consideration the type of engines and manufacturers to be considered may be reduced greatly. The elimination of as many of the designs, types and manufacturers early in the comparison is desirable if a really comprehensive survey is to be made. Such a survey uses much of the manufacturer's as well as the purchaser's time. Since all this time eventually enters into the costs, reduction in the comparisons to be considered should be made whenever conditions permit.

The relative importance of the various auxilaries which can be used in internal combustion engines can best be appreciated by the study of thermal performance of the engine and a review of some of the common operating difficulties and expenses. Figure 1A and 1B shows what might be called a heat balance on a typical internal combustion engine operating at a normal speed. The energy as supplied in the fuel will arbitrarily be divided between useful power as delivered by the engine, energy carried away by the cooling system, energy dissipated by the lubricating oil, energy which goes out the exhaust, and finally those miscellaneous losses not accounted for in the above classification. In this last category might be listed such items as energy losses by natural convection or radiation, and that used by accessories in case they are driven directly by the engine. The figures show that under the best operating conditions, the energy supplied to the engine will be about equally divided between the useful work, the cooling system, and the exhaust. When operating under less favorable loads and speeds, the percentage which goes to work will decrease, and the percentage which goes to the cooling system and exhaust will increase. Since the amount of energy which must be dissipated by the cooling system normally exceeds that converted to work, it can be seen that the cooling system is an important part of the internal combustion engine system. Failure to properly cool the engine will result in excessive temperature of pistons, cylinders and bearings, which will result in excessive maintenance troubles and expenses. Improper temperature regulation of the engine cooling system will likewise result in the engine not operating under the best conditions.

Because of the large amounts of energy which are discharged out of the exhaust and because of the relative high temperatures, this phase of the internal combustion engine offers possibilities with regards to reclaiming of energy, for use in manufacturing processes, heating, or other conditions where exhaust heat can be utilized. Under such conditions, the effect of increased back pressure on the engine and cost of heat exchanger equipment must be balanced against the value of the heat for heating purposes. In the larger type engine where lubricating oil is used for piston cooling, an oil cooler is necessary to insure maintenance of the lubricating system at a proper temperature to result in the best of operating conditions. Because improper lubrication can result in excessive maintenance expenses, this problem may be rather important.

The operating expenses on internal combustion engines may vary from one make to the other depending on the design or the quality of workmanship used. In general though, the main items of expense for a gasoline or gas engine are the cost of maintaining the ignition system, the cost of maintaining the power end which includes piston and rings, cylinder, and cylinder head, the maintenance of bearings which includes the main bearing and connection rod bearing and finally the maintenance of the power take-off system, which will include the clutch and outboard bearing if it is used. The main items of cost of operating oil or Diesel engines will be the fuel system, the power end which will include the piston ring and cylinder and cylinder head, the bearings, and finally the power take-off. On specific engines, design difficulties, particularly on new models, or operating conditions may influence the loading or operation of some specific part of the engine which would result in an overall high cost for that particular part. While such conditions are not common, they nevertheless occur and must be considered in the selection of types of engines.

The data used in the construction of the performance curves have been furnished by Louis Valdes of Le Roi Engine Company and the late F. R. Lovell of Superior Engine Company.

Fluorescence Analysis Reaches Practical Development Stage

By FRANK B. TAYLOR, Staff Writer

FLUORESCENCE has emerged from the experimental laboratory as a new and practical tool of the oil industry. Its applications are many and varied, pertaining as they do to core analysis, correlation, exploration, analysis and refining. Additional applications are hinted by experiment and research under way.

The property of petroleum to fluoresce when stimulated by certain light frequencies has proven a super-sensitive indicator of oils in a mud stream of a drilling well. The property has been used to analyze cores; it has been used to check over old samples taken years previously and stored in almost forgotten sample bags; it has been used in the examination of lubricants and lighter stocks, and it is being turned constantly to new tasks.

In addition to its value and practical application, the use of black light has an intangible and scientific fascination. The operator is frequently surprised with results, and the extreme sensitivity of the analytical method is apt to reveal a burst of fluorescence where none at all was expected. Visual examination in ordinary light is only a weak assistant in the science. Moreover, there is every reason to believe fluorescence has much more to offer than has already been found; it offers a wide-open field for research and experiment.

Fluorescence equipment is being used as part of a portable laboratory. Engineers with a number of companies have devised units which they make use of in the field. Others have installed permanent equipment in laboratories where it can be utilized as occasion arises. Materials and parts necessary to such construction are not difficult to obtain.

The Theory in Brief[1]

Ultra-violet or "black light" is fundamentally the same as the visible rays; red, orange, yellow, etc., with which we are familiar. But being just outside the range of the human eye, we are not sensitive to it. Thus, while it is a light vibration, electro-magnetic in character, it cannot be classed as part of the spectrum, but is just below it, having a greater frequency (Figure 1).

Like light, the ultra-violet vibrations are a form of energy, and when they strike some matter or are absorbed, they give up all or a portion of that energy. The modern concept of the atom is that it is formed of a nucleus with electrons revolving in more or less fixed orbits about this nucleus or common center. The number of electrons determines the nature and properties of the element.

When ultra-violet rays strike an ordinary atom and the energy of the rays are absorbed, an electron assumes a new orbit about the nucleus; the new orbit due to the additional energy being of greater diameter than the original orbit. Under such circumstances an unnatural condition obtains and the atom is unstable. In regaining its stability, the excited electron leaves the orbit into which it was forced and returns to its normal orbit. This transition releases energy in

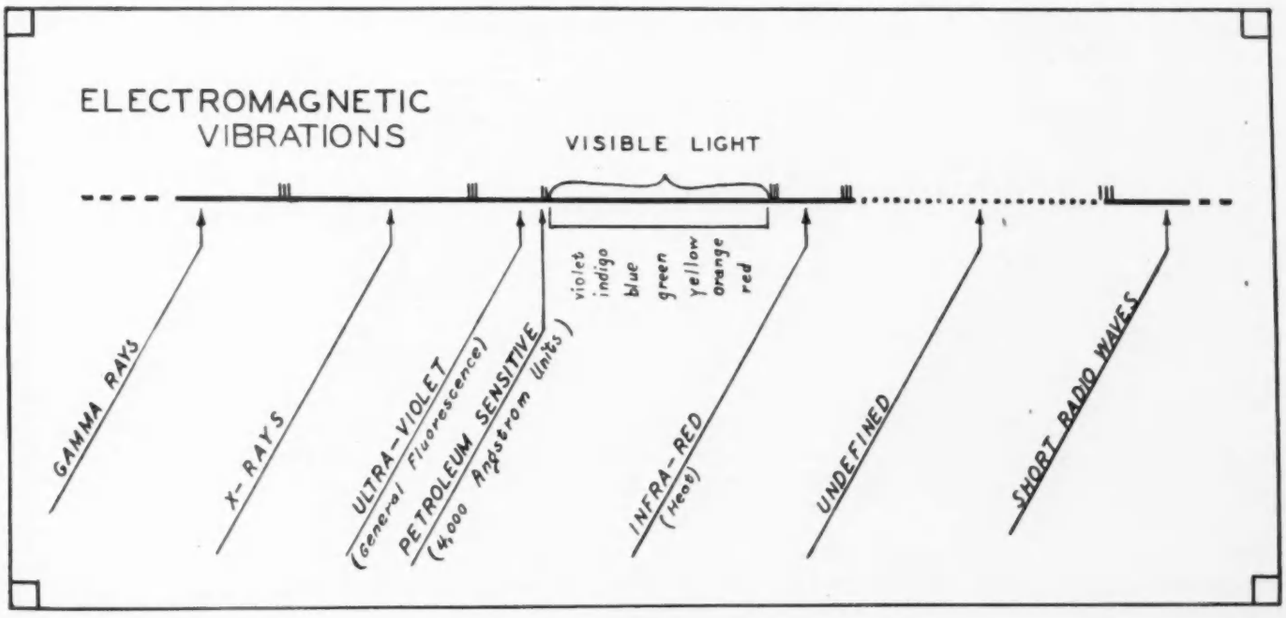
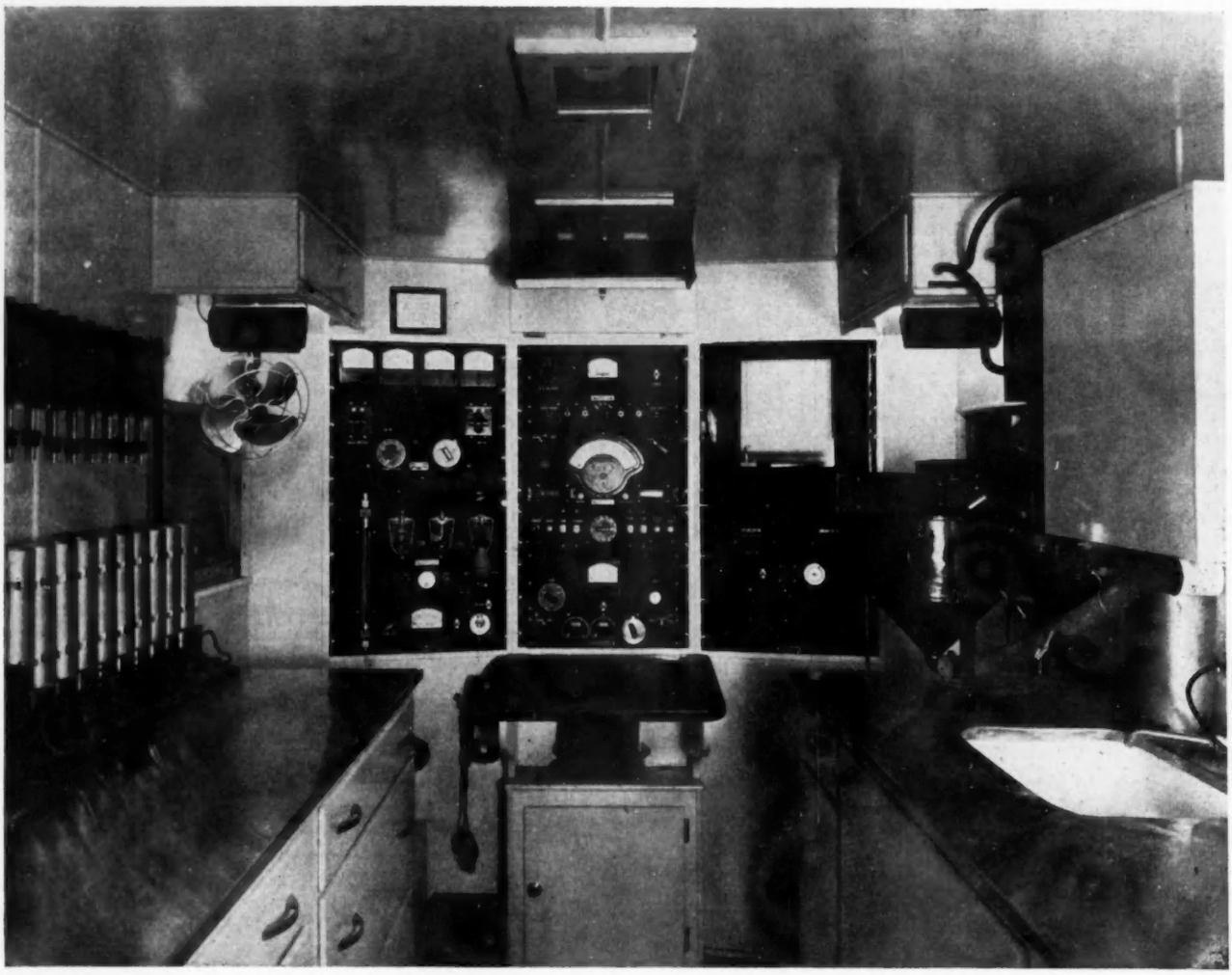


FIGURE 1



A portable field laboratory. At right is fluorescence unit. Hoses are for continually sampling the mud stream.

the form of light. The entire process is fluorescence.

The energy or ray used to excite this inner-atomic process must be varied to coincide with the excitation requirements of a particular atom. Some atoms are susceptible to waves of one length, other atoms require a longer or shorter wave. Apparently not all atoms are subject to fluorescence and this is probably due to an unusual structural stability that is not unbalanced by light waves. The light emitted by an atom when excited by radiation is of longer wave length than the energizing radiation and in theory this is a function of the greater diameter of the electron orbit.[2] But due to the increased wave-length of the emission, which usually places the generated light within the spectrum to which the human eye is sensitive, it is possible to visually study fluorescence.

In the excitation of fluorescence in petroleum a number of suitable ultra-violet sources are commercially available. Three types of lamps or bulbs in particular are in common use in field and laboratory. Probably the most highly specialized type for this purpose is the mercury-vapor bulb which is an ideal source of ultra-violet radiation. In order to use this light effectively it is necessary to excite vaporization, and this requires a starting or impulse current. Entire equipment; bulb at about $7.00, transformer at around $15.00 and converter depending upon current available totals about $100.00 ready to operate.

A popular lamp is the "black-light" bulb which operates on 110-volt alternating or direct current. It is shaped like the usual 200-watt household bulb and is about the same in size. In place of the usual transparent glass, the "black-light" uses deep purple glass, opaque except to frequencies in the ultra-violet. Internally, it is similar to the photo-flood used in photography.

The argon-filled bulb radiates ultra-violet through ionization of gas. It has a transparent bulb and draws only about 2½ watts. This bulb also has the advantage of not being uncomfortably hot when working near it, as does the "black-light" lamp. There are other types of gas-filled bulbs and mercury lights used for fluorescence analysis. Heavy-duty mercury-vapor and tubular lights, with or without filters, may be used but because they radiate further into the ultra-violet in the direction of the true X-ray they are less applicable to oil fluorescence although they are ideal for certain studies in mineral fluorescence which in general require a higher frequency of excitation.

Observations of fluorescence should be made in the dark. Consequently, analytical equipment consists primarly of a viewing chamber from which all but gen-

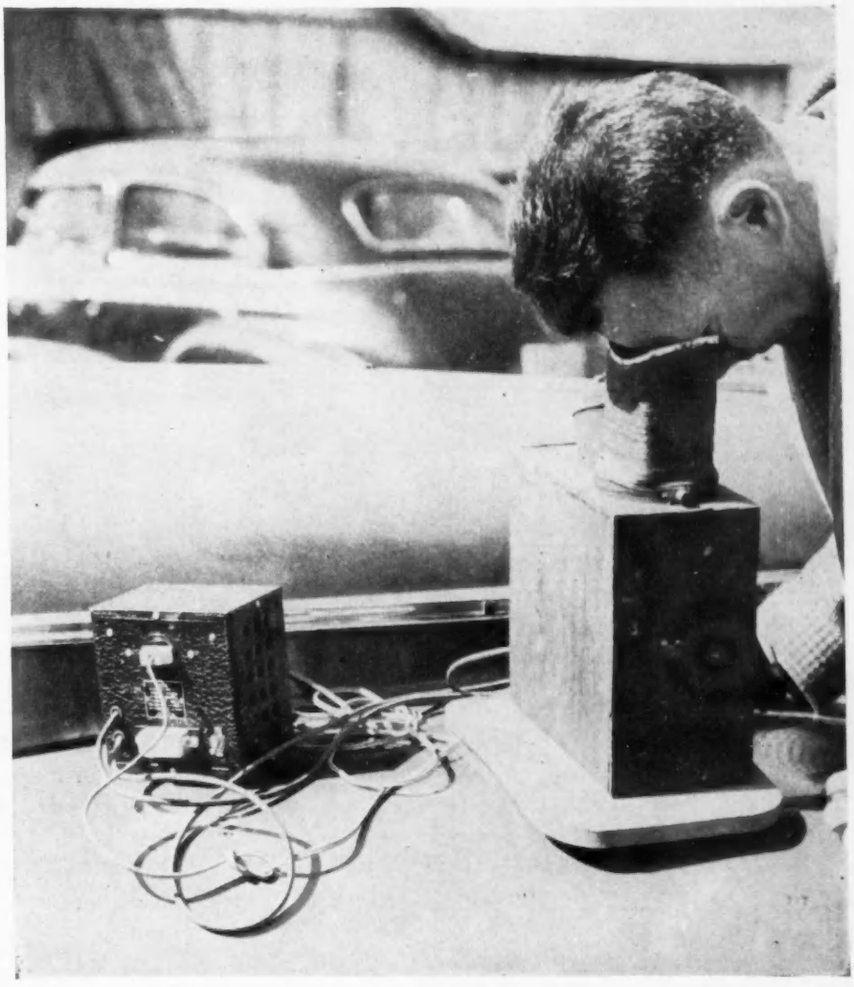
erated ultra-violet and excited fluorescent light is excluded. A simple unit can be constructed with wood or sheet metal. The interior should be dulled with non-fluorescing material. As part of the viewing chamber, the receptacle for the light source preferred should be fixed in place. The viewing aperture should conform to the face and if it is edged with some soft material the operator is less subject to fatigue than if the contact is rigid. An ordinary reading glass can be incorporated into the viewing aperature to assist inspection of the sample, and while this is by no means necessary it aids in examination of core or sample structure under normal light.

Samples of sand, core, mud or cuttings to be examined can be introduced into the unit by means of a retractable shelf or drawer. In the case of a commercial laboratory unit now in field service, a portion of the circulating mud stream is diverted through the viewing chamber so that observation can be continuous if desired. A viewing box with no bottom can be placed over a sample on a pad of sponge rubber, and only slight pressure on the box is necessary to exclude outside light. Greater flexibility of arrangement is possible in the laboratory although unless precision or experimental work is underway, an elaborate setup is not needed. Power source must be adapted to the type of bulb chosen. The regular car battery can be turned to the task of energizing the low-demand argon-type tube with the aid of an inverter to change the input from DC to AC.

The last requisite to fluorescence analysis is a suitable solvent for use with subject matter, in this case oil. Three standard solvents have become popular among engineers, these being carbon tetrachloride, acetone and a refinery cut of light ends at 380° F. The light cuts, 400° F. and lighter, do not fluoresce if pure. It is well to check any solvent to see that it is not fluorescent in itself as this would greatly multiply the problems of observation.

Check and Analysis

There is no substitute for experience and practice in fluorescence observations. There are fine shades of divergence between fluorescent colors that indicate specific occurrences; only a minor change in the glow might be telltale to an experienced operator but be meaningless to the novice. This knowledge is not difficult to acquire from practice, but it is next to impossible to convey even a fair portion of this knowledge either verbally or through writing. Descriptive limitations do not allow the precise definition of colors so important in the visual analysis—when a specimen fluoresces blue it might be an opalescent blue with a white "bloom" or sparkling . . . or in some other way exhibiting unique qualities.



Instrument in use, sample resting upon pad. Inserted eye-piece aids in observations of sample texture under normal light.

Roughly, crude oils fluoresce in accordance with their gravities. A distillate may show practically no glow, or possibly a thin blue. From here the emitted color under the lamp grades down through blue and opalescent blues in the medium light gravities to yellow in the medium-heavy gravities and to yellow - brown, brown and to a brown tinged with green in the very heavy gravity group. In an Arkansas well a heavy-gravity dead crude was recovered that exhibited no fluorescence until cut with a solvent when it showed a rich brown.

These telltale indicators spell oil in the mud stream, in solvents applied to core tabs and to formation cuttings. As little as 1 part in 100,000 parts of inert matter is readily detectable as oil. Some engineers point out that the method is too sensitive for some applications. While this is true in a sense it is a desirable property, nevertheless. Sacked samples from wells long drilled can be checked with the aid of a little solvent with untested formations being examined for possible production. Apparently barren cores, devoid of visible staining, may show fluorescence if a part of a gram of core is placed in solvent. Frequently, a core well saturated will exhibit no color if not sponsored with solvent, but if there is any free oil in the core, this free oil will show color without the aid of solvent. However, a tight core, from which it would be impossible to produce commer-

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cially, may still give a brilliant fluorescence.

Refinements in Technique

Little tricks-of-the-trade are of great assistance in this art. In themselves they are not only practical aids, but lend greater reliability to the analysis. One of these is the use of comparison samples. One engineer has two samples of cores that he uses in the majority of inspections. In making an analysis he has these two; one of a core or cutting without any crude, one good sample; and the sample under examination, beneath the light at the same time. Comparisons can then be immediately made, and if the color recollection of prior tests on the standard samples is in error it is automatically corrected.

If a solvent that can be diluted with an inactive agent, as acetone with water, such dilution can be used in known strengths as a rough yardstick of fluorescent intensity.

A troublesome condition was proven in tests of mud streams made on wells drilling in South Louisiana. It was proven after investigation of a prevalent fluorescence in the drilling fluid that the color could not be caused by crude oil. Further investigation showed a similar color from irradiated bayou water, and this water was used in preparing the drilling muds. The conclusion was established that some matter, probably bugs or animal organisms, was producing the color.

To overcome this complication a thin film of crude oil on glass was placed next the ultra-violet source, between it and the sample to be examined. Fluorescence, being dependent upon absorption of a particular wave or frequency by the irradiated substance, consequently that wave effective to crude oil is likewise absorbed by crude oil. Therefore, placing a thin layer of oil between the light and the object eliminated those rays that would otherwise have produced fluorescence in any oil that might have been carried in the mud stream. The only thing left to fluoresce would then be the bugs. If no color was apparent, the conclusion was established that crude was present, or if an increase in fluorescence was apparent without the oil filter in addition to a determined bug glow, then both crude oil and animal organisms were present.

Continuous examination of core samples, mud, or cuttings is desirable in that this gives the operator a continuity of comparison. This magnifies and makes noticeable changes in texture, oil content or saturation; changes that might otherwise pass without note. A flecked condition, or streaks are generally considered hopeless as indicating commercial production in that particular section of the hole, but continuous examination may disclose a change in the section with more favorable indications.

Limiting Factors—Problems

A factor that until recently has been a serious problem in examining circulating fluids in drilling wells has been the differentiation of lubricating oil and greases used around the rig and on tools that get into the mud stream. The refined products glow in much the same manner as crude oil, and while there is a difference, it is difficult to establish. Generally, the refined hydrocarbon fluoresces a white, light yellow, or yellow to blue; while the crude oil is as before described. It will be noted from this that a difficulty in distinguishing between the two oils would be natural.

Through experiment, commercial laboratories have evolved means of establishing this difference—a simple and positive means of identification. Suppose the mud is being inspected and some flecks of fluorescence are present. They are so minute that only a point of light is evident, so there is no possibility of a physical examination in the time available. However, with the light on, a glow is present, but a point of light or two is thought to be refined oil or grease. By suddenly turning off the light source while still looking at the unknown glow, a refined stock will momentarily remain in place as a tiny black dot. Contrary, as the light is turned off, a crude oil glow instantly loses its identity; there is lingering even for a fraction of time either as a glow or as a minute dot of black.[3]

The viscosity of the mud stream, and its ability to resist contamination by formation fluids, its velocity and mixing while enroute are factors that must be considered in examining drilling fluids. Here again experience is very desirable. On the Gulf Coast, crude oil usually indicates its presence by specks of blue fluorescence. In this area there is extreme mixing of the fluid on its way, this being a function of depth. In Kansas, crude oil indicates by light cream flash; it is less intimately mixed with the drilling fluid, and the time element from formation to analysis under the light is less in proportion to the velocity of the mud stream.

Another factor that must always be considered in checking the mud is that the pick-up of formation fluid is dependent upon pressure and viscosity of the drilling mud; not only upon the possible presence of oil in the formation. Dispersion within the mud is dependent upon viscosity, velocity and time, and consequently varies with depth.

It is difficult to evaluate a core on the basis of fluorescence. This should only be attempted by the experienced operator who generally assumes a considerable margin of safety in drawing a conclusion.

It is difficult to arrive at a decision as to total or as to the intensity of fluorescence from any type of sample. If this were not true, the intensity factor could be used as an additional and important yardstick in measurements. A photo-cell could be turned to this task but this would complicate an analysis that is otherwise desirable because of its simplicity and speed. Work is yet to be done in this respect.

It has been suggested by one engineer that a standard set of fluorescent tabs be prepared so that comparisons could be more accurately detailed and passed on. By such a standardization, reference and experimental work would be simplified without loss of flexibility.

In the examination of muds, some means of bringing the oil to the surface would aid in analysis. If it could be separated from the fluid, an added advantage would be gained. These and the immediate foregoing are not considered as weaknesses, but have been suggested by experimenters as problems to be studied.

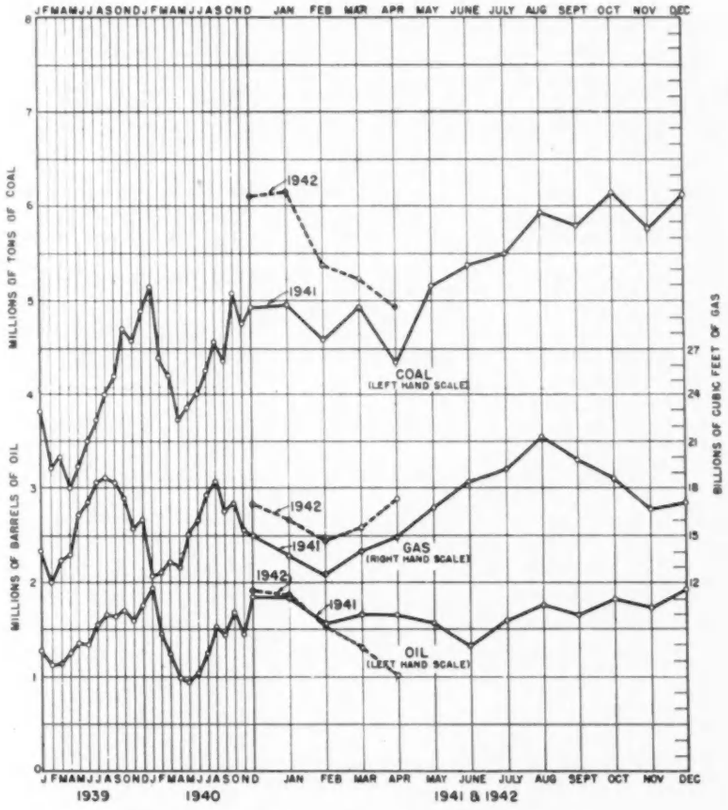
Fluorescence analysis has within the past few years become an important aid on the drilling rig and in the engineering or experimental laboratory. Its applications are limited but of consequence. The possibilities of additional applications are by no means exhausted.

References

[1] Theory is not entirely consistant with observed fact.

[2] "Fluorescence Analysis in Ultra-Violet Light" by J. A. Radley and Julius Grant, (third edition) D. Van Nostrand Company, Inc.

[3] In an effort to arrive at another means of obtaining this identification, a foremost scientist examined refined and crude oils for a momentary lingering of fluorescence after removal of the source. Although both oils were examined to 1/500,000 part of a second, there was no detectable lag time. Consequently, fluorescence, for all practical purposes, may be assumed to cease the instant the energizing source is disestablished.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1940
1941 & 1942

Consumption of fuel for production of electric energy.

Fuel Oil Use by Power Plants Cut To Relieve Shortage

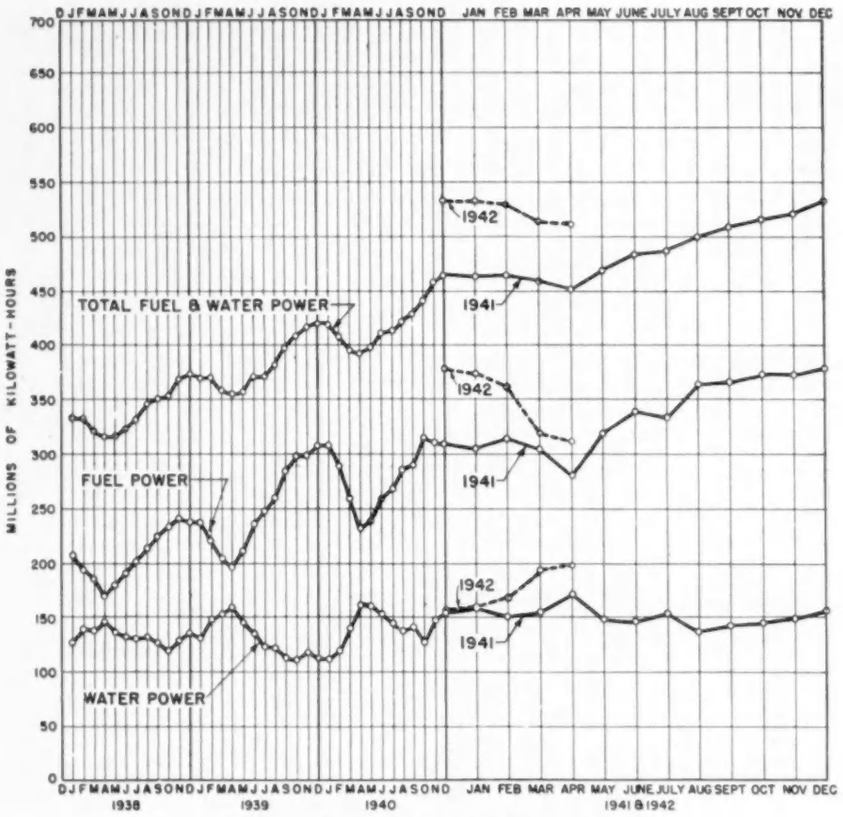
By L. J. LOGAN, Associate Editor

ONE of the important measures through which the shortage of fuel oil on the East Coast is being mitigated is that of converting electric power plants, oil refineries, factories, and other consuming units to substitute fuels, especially coal.

Through such substitutions consumption of residual fuel oil in the East has been reduced 10,000,000 barrels annually (28,000 daily), and additional conversions are expected to increase the saving to 30,000,000 barrels per year (81,000 daily).

Possible conversions are limited to flexible users, such as those mentioned above; and fuel oil must continue to go to ships, railroads equipped with oil-burning locomotives, and factories that cannot practicably substitute other fuel. The requirements of ships, railroads, and war goods factories are so heavy that overall demand will continue above normal despite all the savings that can be made through conversions to other fuels. Requirements for export to the United Nations for war purposes also will be henceforth an increasingly important factor. It is evident, therefore, why more and more emphasis is being placed on residual fuel oil, with efforts being made to increase production and to assure adequate transportation. The importance of the product is attested by the indications that the fate of the proposed 24-inch pipe line from East Texas to New York may depend ultimately on whether or not the line is indispensable in assuring steady and adequate movement of fuel oil to Eastern war production factories.

Similarly, the importance of heavy fuel oil is evidenced in the sweeping plans for petroleum product price readjustments contemplated by the Office of Price Administration and the Office of Petroleum Coordinator, under which prices of the fuel oils would be increased to encourage production, while prices of gasoline would be



Average daily production of electric energy.

lowered to discourage output of that product. The artificially controlled prices would be used to achieve the objective of gaining materially higher yields of fuel oil and proportionally lower yields of ordinary motor gasoline.

Reports recently issued by the Federal Power Commission indicate that a substantial part of the saving in non-essential consumption of heavy fuel oil has been accounted for by conversion of electricity generating plants to other fuels.

Decline in April

The electric power plants of the whole United States consumed only 33,623 barrels of fuel oil daily in April, 1942, as contrasted with 42,068 barrels daily in the previous month, the total use in April having been down to 1,008,688 barrels from 1,304,094 in March, a decrease of 20 percent in the daily average consumption.

That decrease probably was not at all seasonal in nature, judging by the fact that similar fuel oil use was about unchanged last year from March through April.

The subnormal proportions of fuel oil use at power plants lately is attested by the fact that the consumption of 1,008,688 barrels (33,623 daily) in April, 1942, contrasted with use of 1,655,129 barrels (55,171 daily) in April, 1941, a saving of 21,548 barrels a day, or 39 percent, as compared with use a year ago.

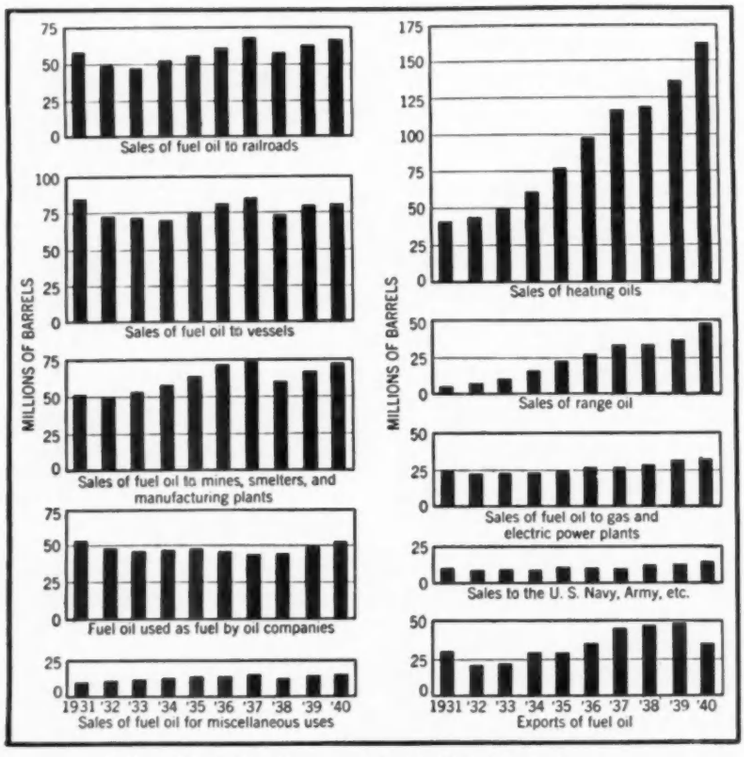
Consumption of coal by electric power plants in April, 1942, totaled 4,929,368 tons, or 13 percent more than the consumption in April, 1941.

Consumption of natural gas by electric power plants in April, 1942, totaled 17,366,944,000 cubic feet, which was 12 percent more than the 15,477,397,000 cubic feet used in March, 1942, and 14 percent more than the 14,965,163,000 cubic feet consumed in April, 1941.

Total production of electric energy for public use in the United States in April, 1942, was 14,333,988 kilowatt-hours, or 13 percent more than that of April, 1941.

Of that total, 5,579,776,000 kilowatt-hours, or 38.9 percent, represented production by water power, the daily average output by that method having reached an all-time high. In April, last year, water power provided 4,806,287,000 kilowatt-hours, or 38 percent of the total output in that month.

Of the production of electric energy for public use in April, 1942, the three fuels, coal, fuel oil, and natural gas, together provided 8,754,212,000 kilowatt-hours, or 61.1 percent of the total. In April of last year, production by the fuels accounted for 62 percent of the total output.


MILLIONS OF BARRELS
Sales of fuel oil to railroads
Sales of fuel oil to vessels
Sales of fuel oil to mines, smelters, and manufacturing plants
Fuel oil used as fuel by oil companies
Sales of fuel oil for miscellaneous uses
Sales of heating oils
Sales of range oil
Sales of fuel oil to gas and electric power plants
Sales to the U. S. Navy, Army, etc.
Exports of fuel oil
1931 '32 '33 '34 '35 '36 '37 '38 '39 '40

Sales of fuel oil and range oil in the United States by uses.

Coupons Used in Designing Cathodic Protection Equipment in a Well Coated Pipe Line

By NORMAN CLARK

IN THE last few years, corrosion of pipe lines has been studied increasingly from every possible angle. From the basic law of chemistry it is seen that corrosion is caused by a discharge of electricity from the surface of the pipe into the ground in which it lies. Pipe lines are seldom without the presence of galvanic, electrolytic, and stray currents, consequently they are exposed to all the phenomena which may be responsible for corrosive decomposition.

Cathodic protection as a means of controlling injurious pipe line currents is beyond the experimental stage, yet the amount of current required and the potential to be maintained on a line is dependent upon a combination of interrelated factors which, for all practical purposes, are infinitely variable. Therefore, the mathematical relation developed for a given area may be in error for an adjoining area through which a line runs.

It is the purpose of this paper to present a method of design of cathodic protection equipment whereby protection may be checked by coupon observation as well as by pipe line voltage.

A survey of a pipe line is made as the initial step in determining the proper procedure to follow in the future protection policy. In this survey pipe to soil potentials are taken at regular intervals. The amount and direction of pipe line currents are found, and soil analyses made.

Pipe to soil potentials are measured by a high resistant voltmeter used in series with a non-polarizing electrode in contact with the soil. The more common type of electrode in use, and the one used here, is the copper sulfate type which is .57 volt positive to iron. A pipe of zero potential will thereby have a voltmeter reading of .57 volt negative.

Two methods may be employed to make contact with buried pipe. A probe bar may be used to locate and make contact, but the coating is damaged and harmful effects result. The alternate method, used here, is to install regular control test stations which are used for permanent reference at intervals of approximately one mile along the line. Such a station is shown by Figure 1. An enameled welding rod is welded to the pipe and extended to the surface of the ground where direct contact is made to the voltmeter. Metal coupons are attached to the welding rods to check the actual protection. These coupons are of metal as nearly like the pipe as possible. The check is made by comparing the corrosion on the connected coupon to the corrosion of the non-connected coupon placed in the ground nearby.

The cathodic protection station consists essentially of a source of direct current power; an iron ground bed for current discharge consisting of several hundred feet of six-inch pipe or its equivalent in weight and surface area; and three or four hundred feet of large copper cable.

The ground bed should receive as much attention and engineering as any part of the unit. Current that is taken from the line by the direct current power unit and discharged into the ground bed through the copper cable will corrode the ground bed, thereby protecting the pipe line. Approximately 20 pounds of iron is eaten away per ampere year. Thus for a given amperage a certain weight of pipe will be used depending upon the length of time the ground bed is designed to last.

Correct interpretation of an initial survey will give data by which a test protection system can be designed. For convenience, protection stations at this point are placed at booster pump stations provided the spacing which results is within reason.

A test protection station consists of a portable direct current generator capable of delivering at least 150 amperes through a resistance of ½ ohm. An arc welding machine is ideal for this purpose. A temporary ground bed of the horizontal type which is laid perpendicular to the pipe line is installed for current discharge during the tests to be made.

After the control stations are installed at intervals

A Four Month Test Cathodic Protection Run on a 6-Inch Well-Coated Pipe Line

Stations Spaced 1½ Miles Apart, Average Date: January 5, 1941

Station No.	Potential on Line Volts	COUPON DATA		Wt. Saved	pH of Soil
		Line Coupon Wt. Lost, Gr.	Soil Coupon Wt. Lost, Gr.		
2	.70	9.00	.40	—8.60	....
7	.54	1.20	.50	— .70	....
13	.73	2.25	1.90	— .35	5.95
14	.76	2.80	1.70	—1.10	6.95
15	.82	1.90	.90	—1.00	....
16	.88	.80	2.50	1.70	6.40
17	.93	2.35	1.05	—1.30	7.38
18	1.20	1.40	.40	—1.00	7.30
20	1.28	.05	2.10	2.05	....
21	1.48	.15	1.00	.85	....
22	1.60	.25	1.50	1.25	....
23	Test Cathodic Protection Station placed at this point				
24	1.66	.40	1.45	1.05	6.45
25	1.34	.95	1.50	.55	6.83
26	1.18	.95	1.95	1.00	7.52
27	1.06	1.80	1.45	— .35	7.10
28	.92	1.66	1.90	.24	6.85
29	.89	1.20	1.75	.50	....
30	.83	2.10	2.30	.20	....
32	.75	4.20	2.77	—1.43	7.20
33	.75	7.40	3.45	—3.95	7.03
35	.88	.95	2.17	1.22	7.10
36	.92	.75	1.80	1.05	7.10
38	1.00	....	....	....	7.06
39	1.32	.10	2.70	2.60	....
40	Test Cathodic protection station placed at this point				
41	1.24	.50	3.05	2.55	7.48
42	.76	1.00	2.83	1.83	7.40
43	.58	5.80	3.80	—2.00	....
45	.70	3.90	5.09	1.19	7.24

along the pipe line and two test protection stations are installed and set in operation, the pipe to soil potentials are taken again. With control test points established, little trouble is experienced in taking a series of pipe line potentials. Tests have shown that only 48 to 72 hours are necessary to charge a line to maximum potential whereas a much shorter time is necessary to have it lose its charge.

On span A-B (Figure 2) of 21 miles of 6-inch line plus 4.2 miles of parallel loop, in black soil where an average pH of 7.02 existed, the potential dropped to .75 volts. Fifty amperes were delivered at each station against resistance of .25 ohm and .13 ohm respectively.

On span B-C (Figure 2) of 18 miles of line with 3.8 miles of loop, the potential reached a minimum of .54 volt. The circuit resistances were .13 ohm and .047 ohm respectively. The units were delivering 50 amperes each. Soil analysis showed an average pH value of 7.35.

The above cases are to be compared with a span of 20 miles plus a 3-mile loop in which a minimum potential above one volt was held on the line. Current delivery was 50 amperes at each station with resistances of .5 ohm and .25 ohm respectively. The average soil analysis showed a pH value of 6.7.

In sandy loam soils higher resistances were encountered and a wider current spread obtained. This was due to less discharge taking place in more resistant soils. The resistance in the circuit of the protection station is an indication of the resistance of the soil in the vicinity. However, for comparison purposes, the resistance of the surface equipment must be known. Increasing the circuit resistance by adding a length of cable actually will lower the potential of the pipe line slightly and increase the power required to deliver sufficient current to the line.

A potential difference of .8 volt negative, measured with the copper sulfate electrode in series to the ground, has been considered as ample for complete protection of a pipe line. To guarantee this arbitrary figure, pairs of iron coupons 1½ inch x 3-inch x 3/16 inch in dimensions were placed at consecutive control stations on the pipe line. After a period of 4 months the coupons were collected, cleaned of all rust and scale, weighed and varnished for future reference. The comparison of the weight loss due to the effect of the pipe potential and the weight loss due to the natural corrosiveness of the soil showed a varying differential amount relative to the potential carried on the pipe line at a given point.

In the data and in the curves of the chart, a combined study of weight loss with pipe potential is

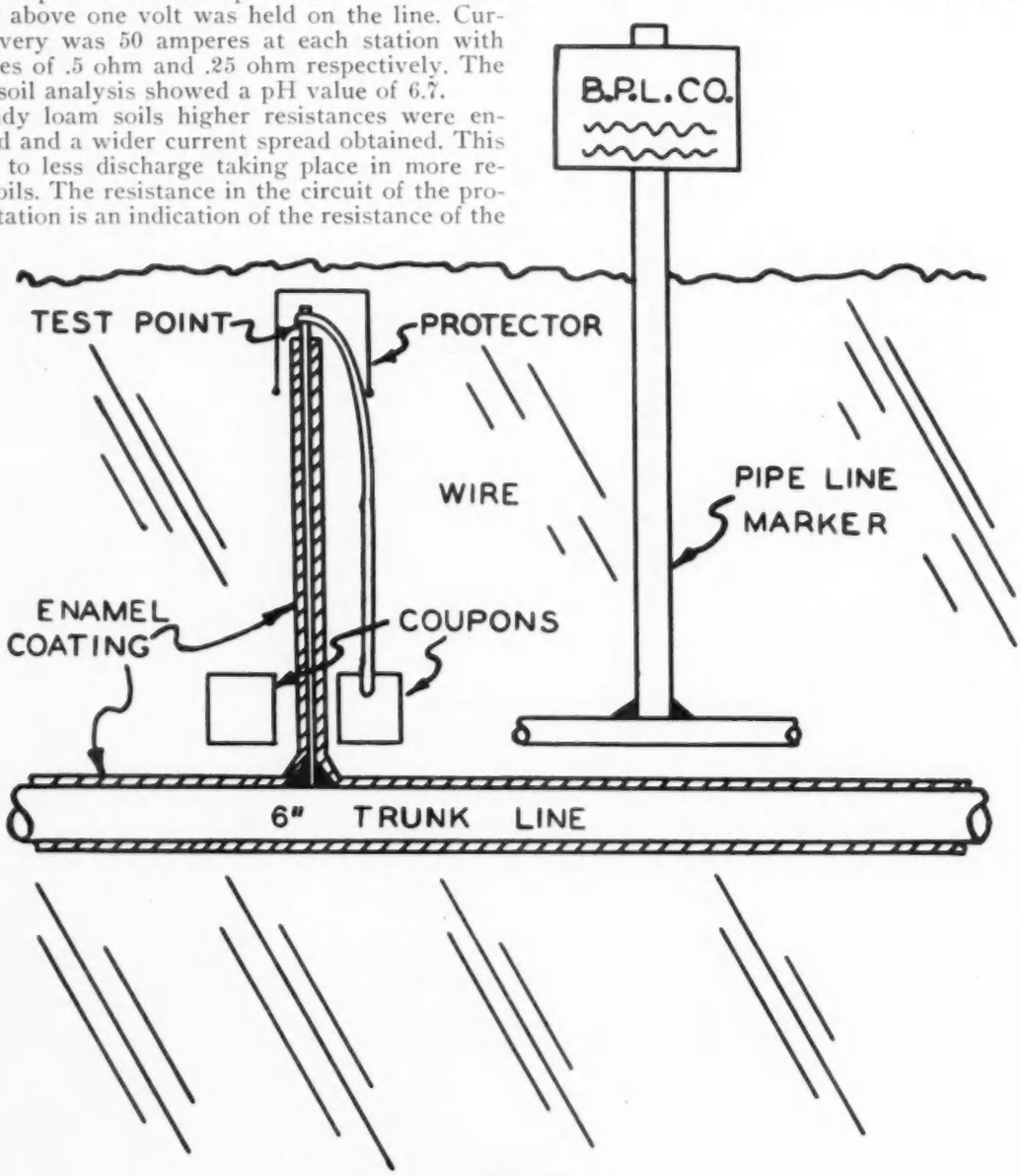


FIGURE 1
Control Test Station

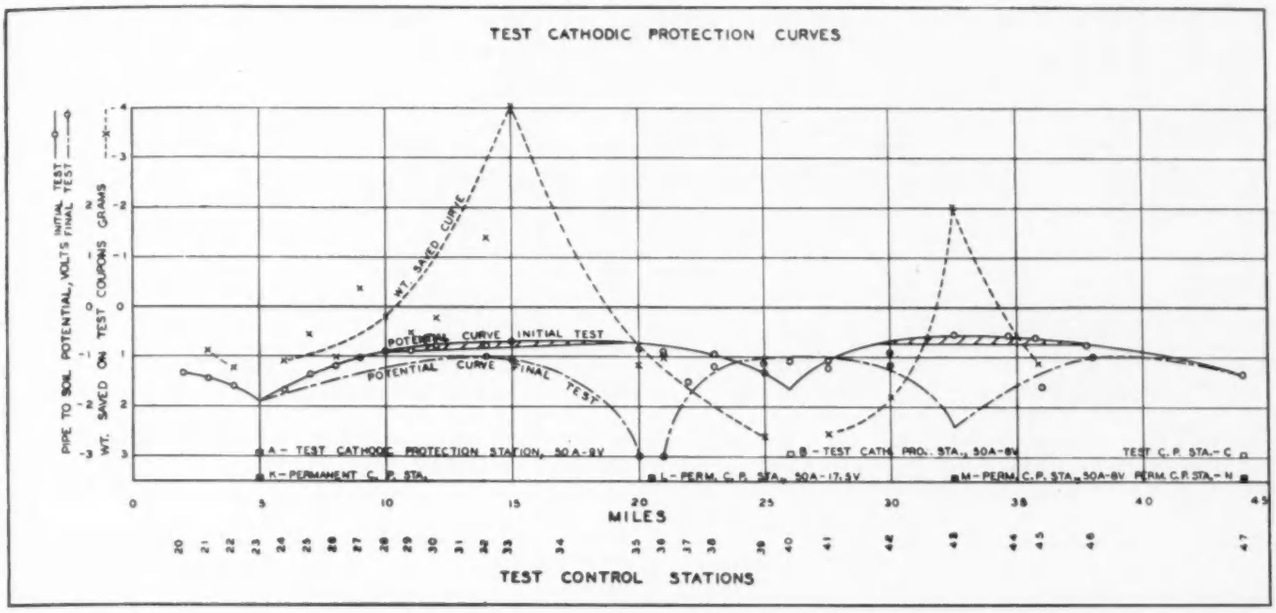

TEST CATHODIC PROTECTION CURVES
PIPE TO SOIL POTENTIAL, VOLTS INITIAL TEST FINAL TEST
WT. SAVED ON TEST COUPONS GRAMS
WT. SAVED CURVE
POTENTIAL CURVE INITIAL TEST
POTENTIAL CURVE FINAL TEST
A - TEST CATHODIC PROTECTION STATION, 50 A-8V
B - TEST CATH. PRO. STA., 50A-8V
TEST C.P. STA.-C
K - PERMANENT C. P. STA.
L - PERM. C. P. STA., 50A-17.5V
M - PERM. C.P. STA., 50A-8V PERM. C.P. STA.-N
MILES
TEST CONTROL STATIONS

FIGURE 2

made. In no case is it found that a coupon was completely free from loss of weight; however, in some instances loss is negligible.

For comparison purposes the loss of metal in grams on the coupon attached to the pipe line is subtracted from the loss of metal in grams on the unattached coupon. The variation ranges from plus to minus with the plus representing a case where the weight lost on the attached coupon is less than the weight lost on the unattached coupon. Protection is in the amount represented by the relative magnitude of the positive number.

The question of applicability of cathodic protection to well-coated pipe lines is answered by the coupon data taken on the unprotected part of the line. In most points where no protection was available the attached coupon was severely corroded. This was due to small currents on the pipe line being discharged at the only point of exit, that being at the coupon.

From the comparisons based on the curves, some voltage between .8 and 1 volt is insurance for protection. No rule can be hard and fast because of varying local conditions. Fluctuation of a potential of less than a quarter of a volt at distances of more than 10 miles from the source of current is easily obtainable by local and seasonal changes.

After the test cathodic protection runs are made and data compiled and examined, the points for permanent cathodic protection stations can be located with a high degree of accuracy.

Where protection stations are spaced far apart, considerable power is wasted near the station because of the high potential necessary to cover the span. The optimum design, therefore, will have a tendency to shorten the span and use smaller power outputs.

The equipment required for power varies with many factors involved. The controlling factor of nearly all installations is that of prime moving for continuous d.c. current output. All the various sets have favorable and unfavorable qualities. Initial costs of all types of cathodic protection equipment are converging to a competitive point allowing the type set used to be chiefly contingent upon whether or not the cost of power is less if self generated or purchased from an electric company.

The limiting factor in power output is the ground bed resistance in the circuit. Power costs are cut proportionally to the lowering of the ground bed resistance. Two methods employed in lowering ground bed resistance are: (1) By putting salt in the ground bed, and (2) adding to the size of the ground bed. Adding salt is by far the better of the two methods.

When the permanent cathodic protection stations are located and ground beds are installed, the portable generator is set up and potential tests are run a second time. The purpose of this second test is to determine the specifications required on the unit to be installed. Since the power required is a function of the ground bed resistance and amperage required for line protection, these must be obtained by actual tests. At the same time the spacing of the units is checked by pipe to soil potentials before the permanent equipment is purchased.

Summary

The spread obtained, and therefore the spacing between cathodic protection stations, depends upon the direction and amount of line currents on the pipe line, the kind and resistance of the soil in which the line is laid, the amount of battery action along the line, and the physical condition of the line.

The potential to be maintained on the line for complete protection depends upon local conditions and is usually not less than .8 volt.

The type of protection equipment used will depend principally upon the type of prime moving power available.

The use of metal coupons in design of cathodic protection equipment affords a quantitative means by which correct line potential and optimum design may be obtained.

Acknowledgement

The author wishes to thank the executives of Barnsdall Pipe Line Company for the privilege of publishing the information contained in this paper, and the American Institute of Mining and Metallurgical Engineers for permission to have it published.

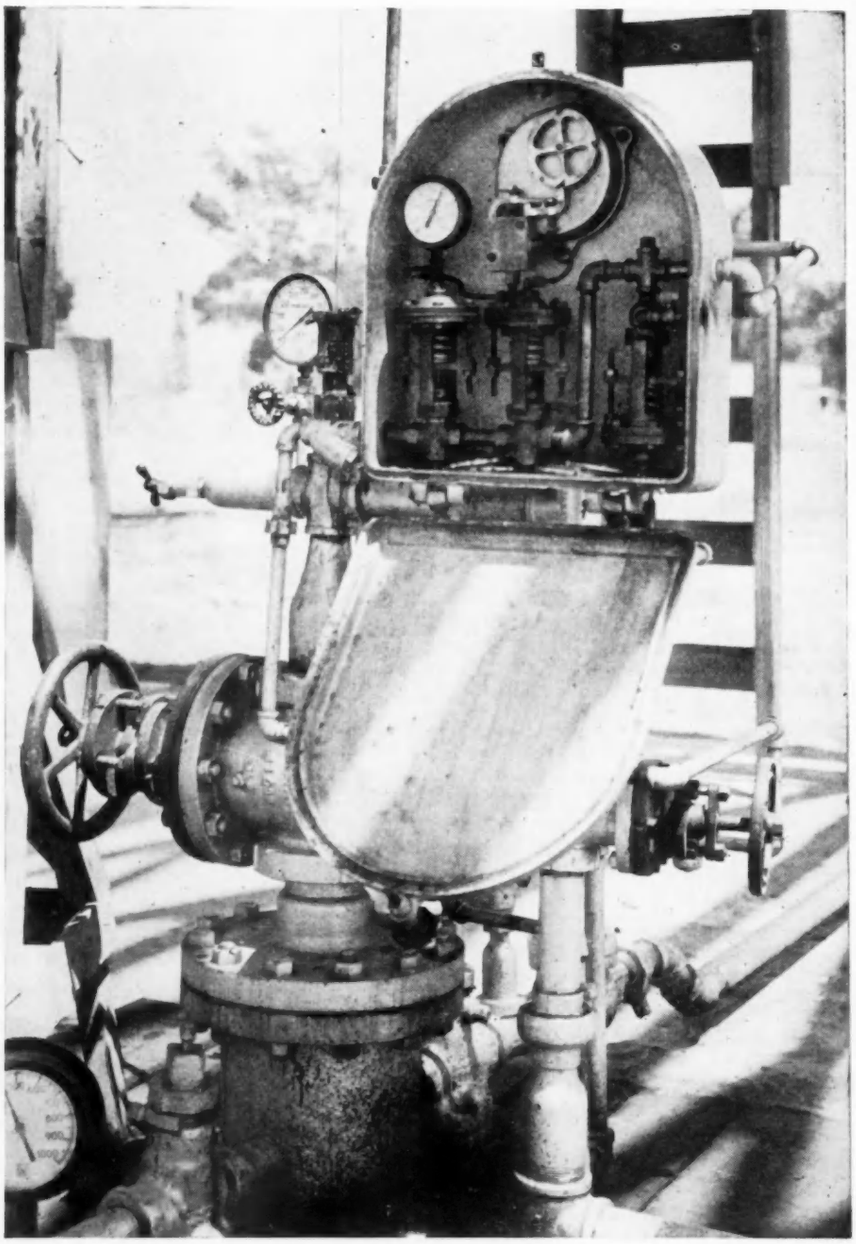
Efficient Equipment Lowers Gas-Lift Costs

By making certain changes in the equipment employed in the operation of a gas-lift project to obtain oil from wells ranging around 6000 feet in depth, a major producer has been able to reduce the quantity of gas 76½ percent of the amount formerly used to lift even a smaller number of barrels of fluid. The type of gas lift installed at the start of the program was the conventional type which required an ascertained depth of submergence and at various times a high gas pressure to kick them off.

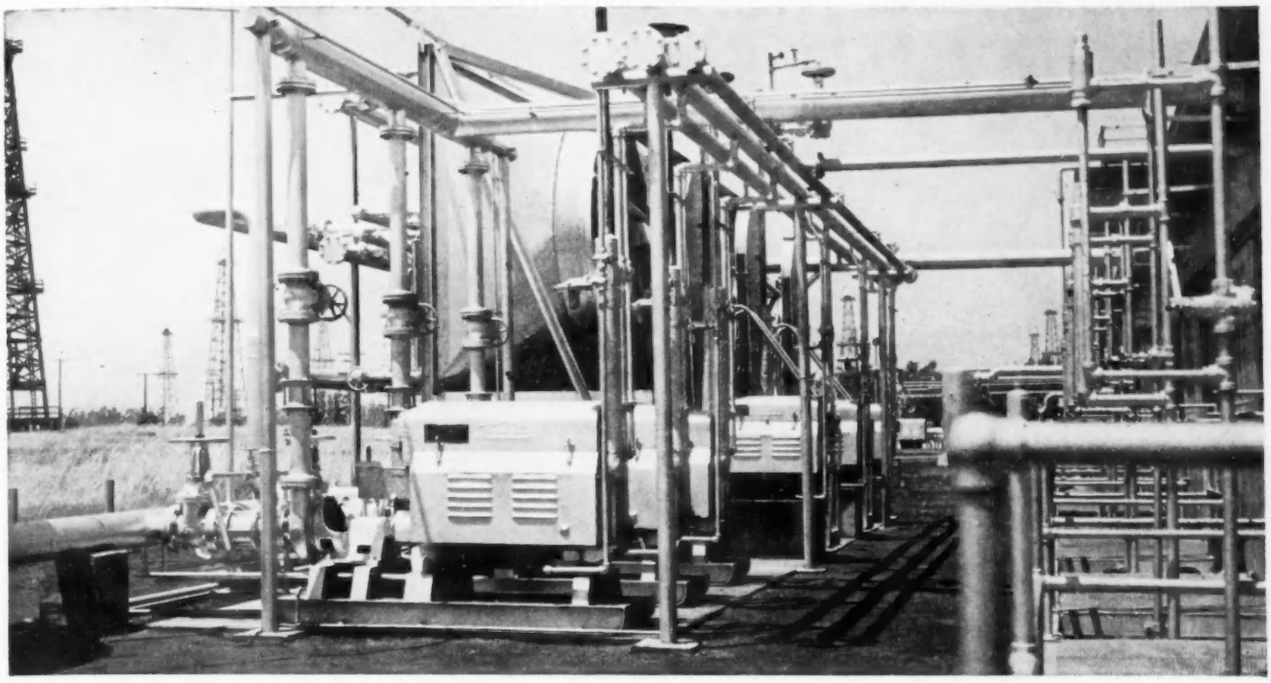
One well in particular while producing on the old style gas lift required an average of 1,067,000 cubic feet daily to lift 128 barrels of fluid, but when changed to the newer type required only 250,000 cubic feet to raise 136 barrels. The sum total of which when multiplied by several wells of this character amounts to a substantial saving of operating horsepower, lower lifting costs and a reduction depreciation of equipment.

Gas is obtained from wells on the property which are being produced by pumping, gas lift and a few which are still flowing. Gas is handled by a central station equipped with horizontal engine-driven compressors. Several innovations, or departures from the standard method of operating and maintaining this gas-lift station have been introduced since the present lifting equipment was placed in operation. Among these changes is a system for handling cooling water which has been effective, not only for the maintenance of the necessary temperature of the circulating water but has also been the means of materially reducing the quantity required for cooling by reducing evaporation.

Large radiator cooling units are installed on the compressor side of the building, connected with a manifold header at the top inlet and the bottom outlet so that water flowing through all of the cylinder jackets is directed to the cooling units without attempt at separation. Multi-cylinder vertical gas engines operate large fans enclosed in shrouds to prevent recycle of the air and loss of volume by unnecessary turbulence set up at the tips of the fan blades. Each engine is equipped with individual starter, control panel and grooved pulley with V belts for transmission of power to its blower. At night and on cool days, it is unnecessary to operate all of the blowers, and as many of them are shut down as the temperature of the circulating water requires. Not only does this installation conserve water while reducing the temperature of the jacket circulation, but by eliminating the vapor drift caused by



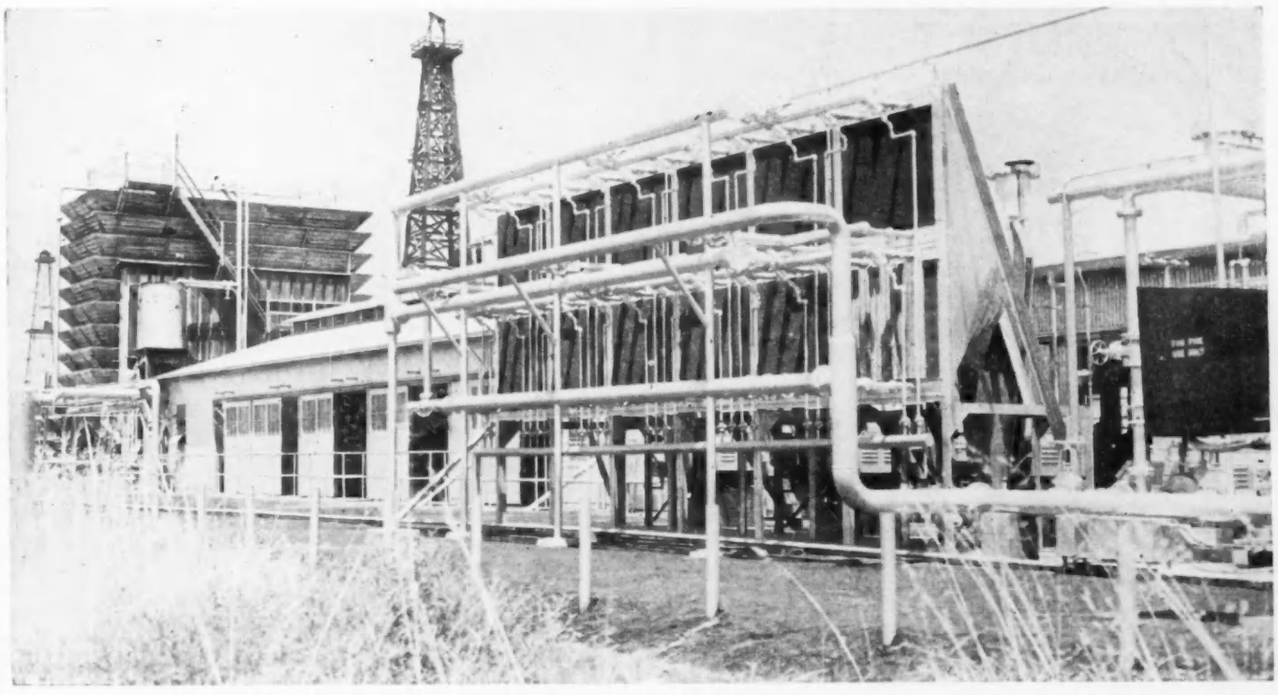
Gas lift controller with case opened to show operating mechanism and notched dial which governs the time cycle; this one operating at 30-minute intervals.



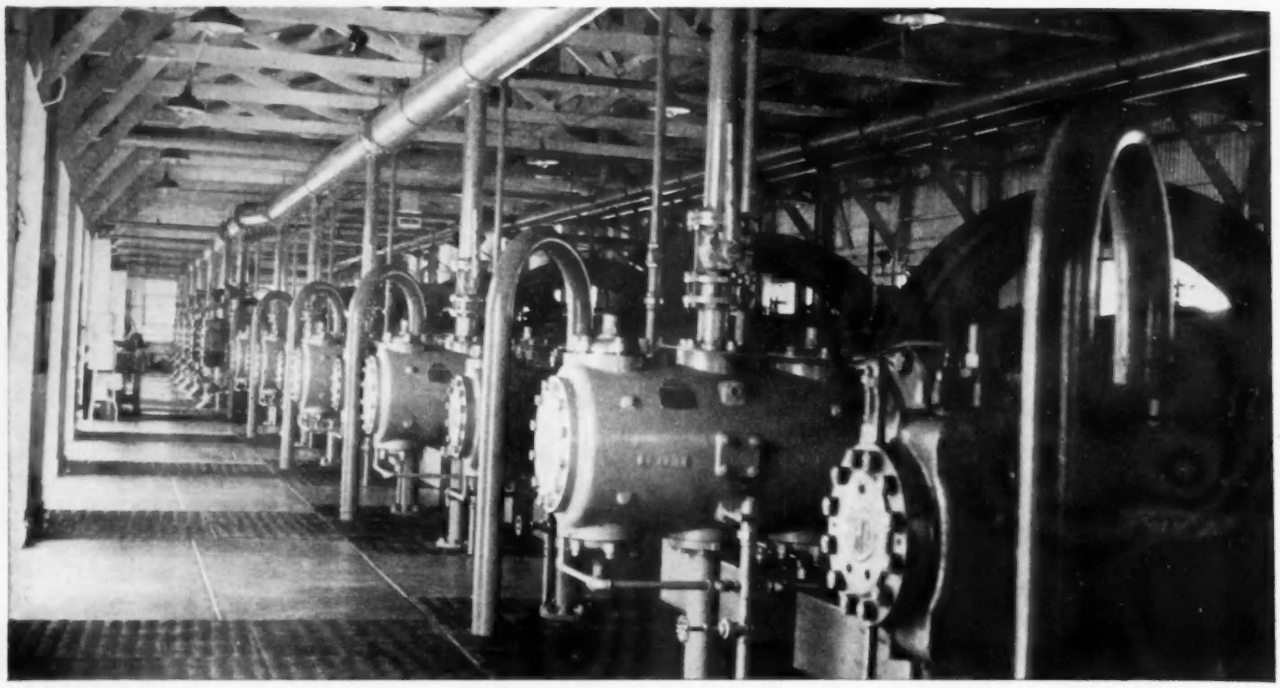
Radiator type water cooling units with piping and engines which drive blowers and circulating pumps.

winds the surrounding equipment and buildings are protected and the appearance maintained with freedom from disintegration caused by rust. The water in this unit is circulated by other similar multicylinder engines directly connected to centrifugal pumps which take suction from the lower part of the radiator through a common suction header, and directs it to the engine jackets, to be returned at low pressure to the top water section of the cooling units.

The gas is handled through two stages of compression with interstage cooling through atmospheric sections placed in a conventional louvre tower. Cooling in the second stage is accomplished to increase the efficiency of the compressor units, but the discharge from the second stage is delivered to a common header and is distributed to the wells without reduction of temperature. The temperature of the gas flowing through the distribution pipe lines is of minor importance since ground cooling soon reduces the temperature without the aid of water-cooled sections. The gas leaving the dis-



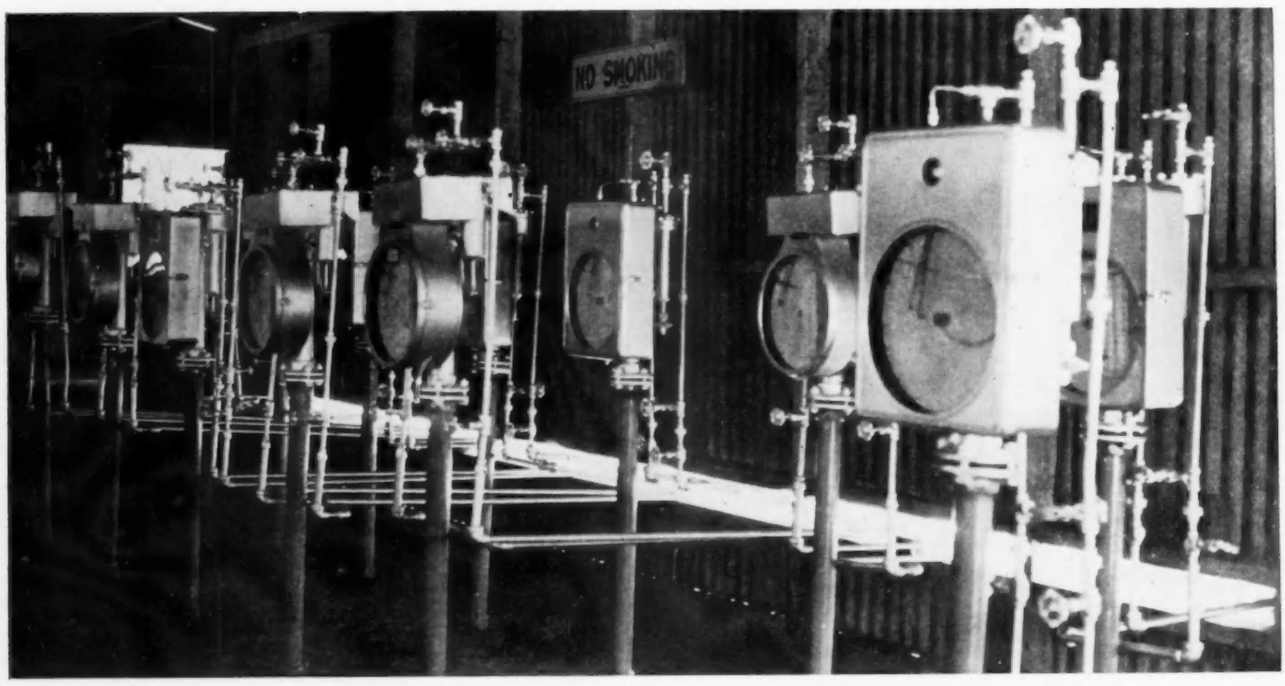
Battery of water cooling units employed in gas-lift station to control temperature of jacket cooling.



Interior of compressor room in gas-lift project showing water connections in closed system, and header connections for suction of gas.

charge header passes into the distribution lines which are grouped near a building containing switching facilities and each line equipped with an orifice flange to which is connected a recorder for making a record of the volume to each well. Grouping switching facilities and measuring instruments in this building facilitates chart changing and inspection of gas volumes.

On an average well which is produced with this type of gas lift, the well is prepared for operating by running tubing with the surface equipment attached above the casing head and forming an integral part of the string of pipe. Taking an individual well as an example, the standing valve is set at 5922 feet with a packer on the tubing set at 5859 feet. The operating valve of the system is located at 5856 feet. To decrease the pressure and the time required to bring a well on production after standing over night, or a delayed time caused by any condition encountered in production practice, kick-off valves are located at various distances up the tubing. These valves on tubing run in the well used as an illustration are set at 4119 feet, 3227 feet and 2600 feet.



Recorders setting inside building beside group of gas-lift distribution lines for measurement of gas volumes.

New Measures Cut Stripper Production Costs

By F. R. COZZENS, Equity Oil & Gas Company

"IT'S an ill wind that blows nobody good" runs the old adage and when Eastern oil prices were ceilinged, along with restrictions regarding the spacing of new wells and limitation of materials for old ones, operators looked anxiously into the swirl of bad winds to see what good, if any, was coming up. Production, it was generally agreed must be maintained, and it was also agreed that with the rapid rise in the cost of available material, production in many cases at least, could be maintained only at a loss. But stripper operators, long weather-beaten by divers rules and regulations, took loyal advantage of the time-honored advice of "patch up your old machinery and produce more economically." A few went deeper than that—down into their wells with various ways to conserve metal, and to free the oil of paraffin and sludge, so that surface economics could be practiced more efficiently. These well explorations have been a rainbow on the skies, and a war blessing to scores of stripper operators.

Chemical formation plugs, being somewhat in the experimental stage during the past three years, have come into active use as a means of conserving casing and rubber packers in new wells, and for stopping water leaks in old ones, where leaking sand areas can be isolated. The chemical formation plug is a mixture of several materials, having when mixed, a viscosity of approximately 1.25 as compared to water, and being nonsoluble in either oil or water, it sets up readily at any desired point in the well. It is being used especially in drilling wells to stop water leaks along the walls, thus eliminating one or more strings of casing, or in many cases, allowing drilling to continue until a more favorable casing point is reached. Temperature influences the time required for chemical plugs to set up, and in well treatments a composition of material is selected which will have the desired setting time at the temperature to be encountered at the bottom of the hole. From 10 to 30 hours are required for the chemical mass to set up. By using pressure exerted by the drill, or by air piped to the job from a compressor, it is easy to force the plastic mass back into a crevice for a distance of a few inches to several feet. Once it has hardened, normal water force can not break through. The same type of treatment has been applied successfully to water leaks in a pay sand, when such leaks can be isolated. Some interesting work in connection with chemical formation plugs is being carried out by the Bradford District Research Group, of State College, Pennsylvania.

In the further conservation of iron, rubber, and brass, there is a rapid growing use of magnesium sections in casing strings, especially in wells having two or more productive sands. The general practice is to drill the well down to the top of the final producing zone, where casing is set and cemented with the sections as part of the regular string, the sections also being placed, of course, opposite all other producing zones which have been encountered along the course. The bottom or final zone is then drilled in and shot. Following this, the bottom zone is packed off or bridged, and acid is applied through the tubing to the magnesium sections. This treatment dissolves and removes the magnesium sections, along with cement shoulders which may have been set up behind the sections, and thus opens the upper zones to production. Finally, the bridge at bottom of well is opened, so all zones can be pumped in the regular manner. In practically every well where casing sections are used there is a marked saving in iron pipe, as well as almost complete elimination of rubber packers and brass fittings.

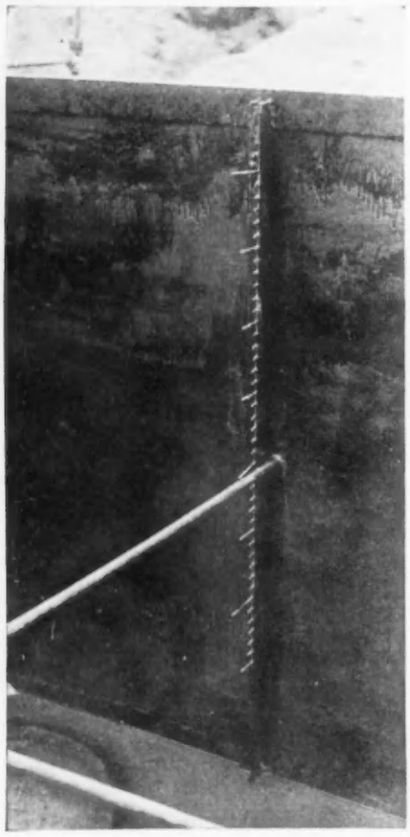
As is generally known, wells clogged with paraffin can never be operated efficiently, and while carbide has a widespread use as a paraffin remover in the eastern fields, its application requires that pumping equipment be removed, and bailing facilities arranged over the hole. Under present conditions, when the use of material must be pared to the minimum, operators are making greater use of chemical solvents. Commercial chemical solvents, of which several types are now available are somewhat heavier in body than crude oil and act both as a true solvent and as a carrier for the asphaltic structure which holds the paraffin mass together. They are used in a well with the pumping equipment intact, and the general practice is to connect a lead line with a tank containing the solvent to the casing-head of the well to be treated. The solvent is forced down the casing by pressure, thence up through the tubing, and back again in a continuous route for a period of 10 to 20 hours. Afterward, it is pumped out, along with the paraffin residue which has been dissolved from the casing, tubing, and sand-face. This is known as the circulation treatment, since the well is circulated during the time of application. This method has proven effective in more than 80 percent of wells tested, and there is a marked saving in equipment and time.

These, and various other minor emergency methods have lowered oil production cost 10 to 35 percent in areas tested, and in practically all cases they have increased the efficiency of surface equipment. While such measures will not atone for low selling price and lack of essential materials, they, nevertheless, have taught operators lessons in conservation which will prove of lasting value when conditions are again stabilized.

PRACTICAL OPERATING *Hints* FOR

1. MUD HANDLING

Built-in Gauge Shows Storage Pit Volume



Welded strip with inch-markers of rod permit accurate estimate of changes in content of steel tank.

CLOSE control of drilling mud is required while drilling in deep areas, particularly where high pressures are likely to be encountered. Sudden changes in the volume of mud being returned must be noted and appropriate action taken promptly.

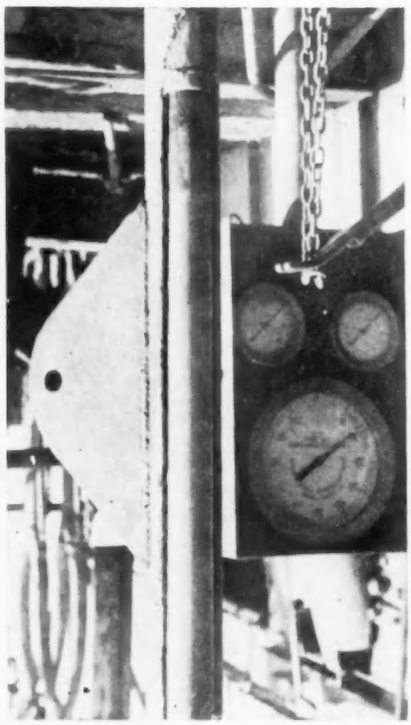
To simplfy the work of constantly checking and recording the volume of drilling fluid, the drilling foreman and welder of one company devised a simple, practical fluid level indicator for use in their large steel mud supply tank. A length of 2-inch angle iron was taken to the welding shop and marked off in inches along the edge of one of the sides. Short lengths of ¼-inch welding wire welded at each of these marks. At the 6-inch intervals, somewhat longer pieces of the material were tacked on, and still longer ones were used at the foot marks. The angle iron then was welded to the side of the tank interior.

With this arrangement, it no is necessary for the mud man to gauge fluid level with a line or stick. A glance inside the tank tells the level at once, and by referring to the last reading, shows immediately whether or not a change has occurred.

2. MEASURING

Bracket on Catline Guard Mounts Reel

FOR convenience in running surveys and in performing other operations requiring use of a wire line, one Gulf Coast oil company erects special stands for attaching the wire line reel, making operations more convenient for workers and at the same time, expediting winding the line by placing reel in location to facilitate use of the cathead in reeling. The device is welded to the spinning line guide roller guard, which stands vertically in front of the brake, in a position readily observed and serviced by the driller.



Carried on the guard of catline roller, this support holds reel for cathead power application.

The reel base is a steel plate ¼-inch thick, triangular in shape, with two sides of the triangle about 18 inches long, the other having a length of approximately 24 inches. This side is welded to the fixed portion of the spinning-line guide post, and is centered about 4 feet above the floor.

The right angle corner extending perpendicular to the post is rounded to prevent the sharp edge from retarding movement of equipment or catching in the clothing of workers, and a 1-inch hole is drilled through it near the corner. When the reel is used, it is fastened to the plate by means of a bolt inserted into the hole, in position to be turned by direct connection with the catline. After completion of the job, the reel is easily removed and stored in a more convenient location until needed again.

3. CONTROLS

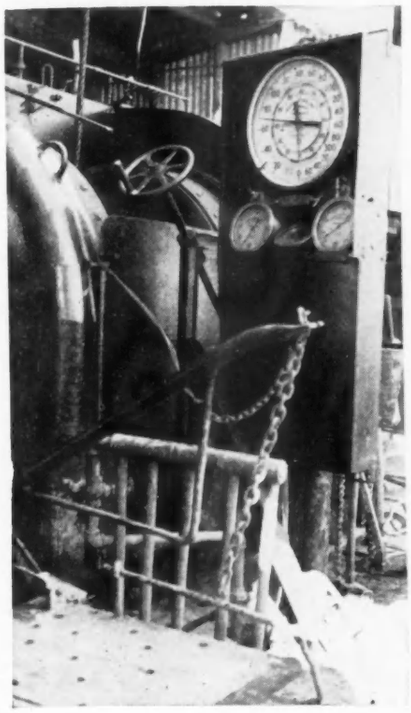
Extended Throttle For Rotary Engine

CUSTOMARY location of the rotary engine throttle, even when the rotary drive unit is mounted below the derrick floor, is alongside the controls of the drawworks power unit. To separate these controls, and thus speed the driller's manipulation of both engines, one contractor sets up an inclined extension from the rotary engine throttle which terminates in a bearing or support in front of the drum shield and slightly above the normal operating position of the brake lever.

On this extension is mounted a hand wheel, with a projecting knob

THE practical operating hints for the drilling rig, production man and pipeliner, appearing regularly in these pages, are secured from oil operations everywhere and offer suggestions that will help to improve operating efficiency and safety.

The items give an excellent picture of the remarkable ingenuity being exercised by the operating divisions of the industry. Contributions to these features will be paid for at the rate of $5 for each illustrated item accepted. Address contributions to "The Editor, The Oil Weekly, Houston."



Brought through the floor between drum shield and panel, this set-up centralizes all power.

or handle to permit rapid opening or closing of the throttle once it has been cleared of the seat. Location of the throttle extension in this position enables the driller to handle the table rotation without taking his attention from the table itself, and also to control this unit and the drawworks engine simultaneously without confusion of throttle wheels.

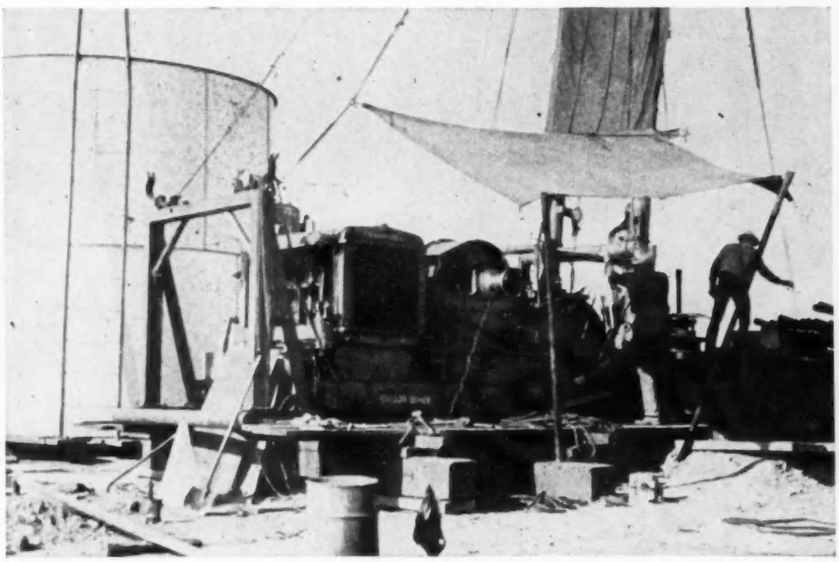
Pressure-gun fittings at the bearings on the throttle extension enable the unit to be lubricated readily, and binding thus avoided.

4. PROTECTION

Canvas Fly Over Stand Cuts Glare and Heat

TO PROTECT the driller from sun on a slim-hole unit when not otherwise equipped with shelter, one drilling company provides a rectangular canvas or tent fly, one edge sewed or roped to a light piece of timber of the proper length to be tied to one of a pair of the A-mast guys. The other end of the side carrying the timber stretcher is secured to the other guy with a bit of soft line through the corner grommet, and the opposite or outer corners are then each carried on spreaders or poles, roped to the edge of the canvas or fastened in place by means of spikes in the ends passed through grommets in the canvas.

Auxiliary guys at the outer corners are fastened to nearby stakes or tied to convenient points on the drilling equipment, to provide against whipping of the shelter or possible collapsing against the timber stretcher.



Without blocking air or light from the driller to any great extent, this canvas fly affords a maximum of shelter from noonday sun and summer showers. Guys and poles provide adjustment.

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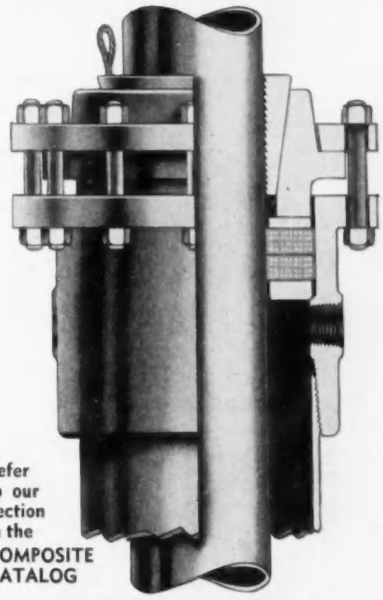

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Economical Operation of Chemical Pumps

By Gas Pressure Distribution System

ONE of the several available types of chemical-injector pumps now on the market has for its power source a small piston which is operated by gas or air pressure. Movement of the piston in turn actuates a small pump which forces small quantities of the chemical into the flow line or lead line, at or near the flow valve.

Gas pressure taken directly from the casing head ordinarily may be used for this power, but in certain instances, particularly in the case of extremely high-pressure-flowing wells, it is impractical to do so. Small fittings have a tendency to freeze up when the gas pressure is reduced to less than 50 pounds so that it can be used in the small chemical-feed-pump engine. To install individual automatically operating pressure regulators of the size and capacity needed for the purpose of reducing the pressure, usually runs up the costs to prohibitively high levels, and still does not eliminate the freezing-up problem.

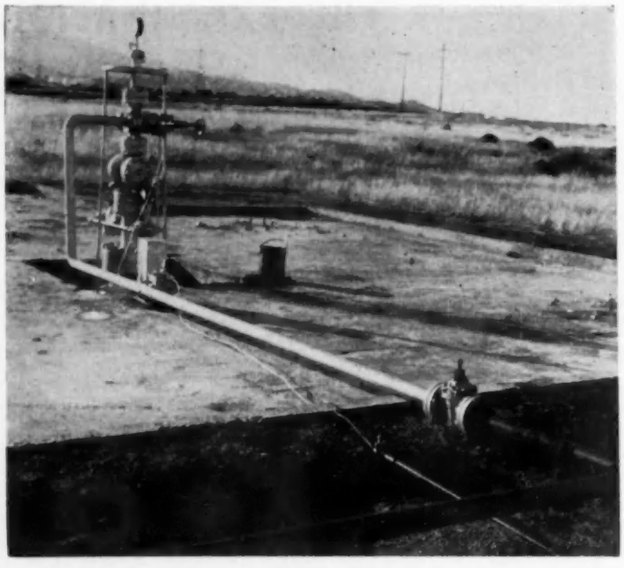
Several operators recently have approached the problem from a different angle, and with evident success, by taking low-pressure gas off at a centrally located trap setting and distributing it to the various wells through a network of small pipe lines.

Pressure is taken off in a ½-inch line from the gas outlet side of the low-pressure trap, and at a convenient location near the separator, is connected to a small 0- to 100-pound diaphragm-type pressure regulator, of the type commonly used on welding equipment. Gas leaving the separator at 120 pounds is brought down to approximately 20 pounds at the regulator, from where it is distributed to the various wells, equipped with the chemical injectors. The line pressure below the regulator may be adjusted to any pressure, depending upon the type of installation, size of piping used, or amount of line pressure lost due to friction in the pipe while traveling over to the wells.

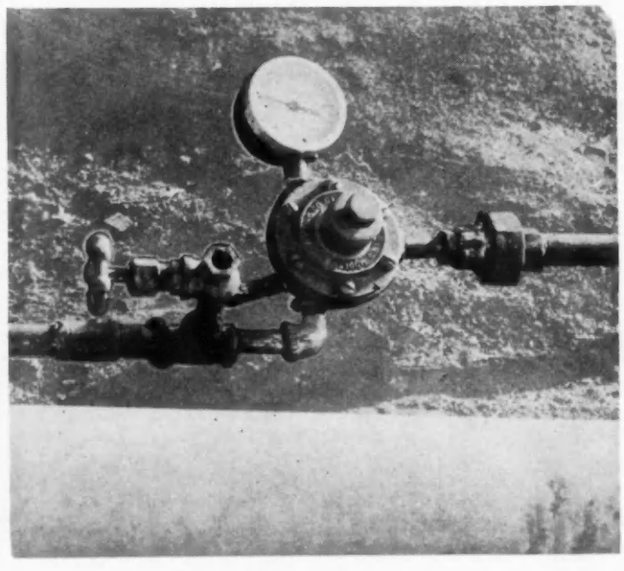
The ½-inch lines are relatively inexpensive, are quickly and easily strung out, and require little equipment to lay them along the ground. Lines are laid on the ground for the greater part of the distance traversed, but are buried two or three inches deep at road crossings or places exposed to travel by the service trucks or pulling units.

The field line is terminated with a ½-inch needle valve at the edge of the concrete matting surrounding each well location. From there on over to the well fitting, pressure is conducted through a length of copper tubing. In the case of a well which is closer than any other to the source of pressure, and the pressure is therefore slightly higher than necessary at the chemical injector unit, the small needle valve may be closed several turns to still further reduce the pressure at that point.

Excellent and trouble-free results have thus far been obtained with this type of pressure distribution system. The set-up described above easily accommodates an average 8- or 10-well lease. For larger leases the system may be broken down into several units, each with its own centrally located regulator valve. The installations have a comparatively small initial cost, and practically all of them may be readily salvaged for use elsewhere when the wells no longer require that type of chemical injector.



Pressure arrives at the well through a ½-inch line. A length of copper tubing carries it on over to the small chemical injector pump situated near the well.



Gas pressure at 120 pounds is taken off at a centrally located low pressure trap and reduced to 20 pounds for field distribution through a low pressure welding regulator.

The Week's News

Texas Production Trimmed 65,000 Barrels Per Day

Crude production in Texas during the last half of June is expected to be about 65,000 barrels less than during the first half of the month, the Railroad Commission having issued an order fixing daily total crude allowable at 1,190,322 barrels. The commission estimates operators will fail to produce 78,982 barrels of the total allowable assigned, leaving a total output of crude that will amount to an average of 1,111,340 barrels. To this must be added 98,000 barrels of condensate and other liquids, making an actual production of both crude and condensate that is calculated to be 1,209,340 barrels.

It is significant that the Railroad Commission in fixing allowables is gradually approaching the estimated market demand fixed by OPC. The new figure will be only 140,700 barrels more than the OPC estimate of consumer demand, whereas a month ago there was a difference of almost 450,000 barrels.

The new order provided for an increase of 1447 barrels in Gulf Coast field, 758 barrels in Southwest Texas and 898 barrels in North Texas. A cut of 65,434 barrels daily for the East Texas field was ordered.

Virtually all the allowable adjustment was effected by shutdown changes. The state generally will be shutdown for five days and the East Texas field for seven days. Shutdown days will be June 20, 21, 28, 29 and 30 for the state generally; to these days East Texas will be closed June 23 and 27.

The daily allowable for East Texas was curtailed from 344,399 barrels to 278,965 barrels, made necessary the commission pointed out because crude storage was increasing at the rate of 143,280 barrels daily.

At a statewide hearing held in Austin on June 16, little change in the market situation for Texas was indicated. Total nominations for crude purchases amounted to 1,444,663 barrels, an increase of 51,495 barrels daily over June nominations. Of this increase 25,333 barrels was for District 2 in Southwest Texas, and, peculiarly, 27,965 barrels was for oil in the East Texas field where oil has been going to storage.

This was the first hearing since Commissioner Jerry Sadler resigned to join the army. Because the statewide order was continued much as it had been during the past few months, it appeared there would be little change in the commission's policy immediately as a result of Sadler's absence.

May Prorate Condensate

It appeared that the commission contemplated some change in respect to the production of condensate fields. Commissioner Culberson read into the record a letter from Coordinator Harold Ickes, dated June 10, which enclosed a formal certification recommending that the commission "take steps to limit production of those types of crude petroleum which are commonly known as condensate and distillate. In restricting rates at which these particular petroleum liquids are produced, consideration should be given to the relative operating efficiencies of the various condensate and distillate fields and cycling plants and to the relative qualities of the petroleum liquids produced from the standpoint of their respective usefulness for the manufacture of war products." Ickes urged distillate curtailment to "assist in the balancing of the total amont of petroleum liquids with the available transportation facilities, as well as to assure that the burdens of curtailment may be borne by all classes of operators."

When questioned about an actual program for these plants, the commission indicated no definite plan had been decided upon.

Further Restrictions on Drilling Supplies Forecast

Problems connected with the scarcity of drilling materials, the rubber shortage, and transportation of petroleum were discussed by George A. Wilson, assistant to Robert E. Allen, deputy petroleum coordinator, at the Louisiana statewide proration hearing last week.

Steel and all types of fabricated steel equipment are becoming increasingly scarce, he said. When M-68 went into effect it was hoped there would be enough steel available to permit continued operations. That struck the industry as a serious curtailment, but it is probable that the industry will see far more serious curtailment in the near future.

Asserting that P-98, under which materials may be obtained under certain conditions, will expire July 1, Wilson said, "just what will replace it I am not at liberty to say at this time but it is fairly certain that it will be replaced by another method which will make available less materials than you can get under M-68 and P-98 at the present time.

"This means that we must make materials available for wildcatting. We think every encouragement should be given to wildcatting, which means there will be less equipment for proven areas."

Wilson said it is OPC's hope that the scrap rubber drive will be sufficiently productive that it will be possible to maintain a large percentage of automobiles in use without stringent rationing for the purpose of conserving rubber.

"We don't have enough rubber to go around for military purposes," he said, "but if the drive nets quantities which the OPC believes to exist, there may be enough scrap which can be reclaimed under modern methods of reclamation to satisfy essential military requirements of this country and our Allies, and have enough left to provide recapping material to keep some civilian automobiles going."

A recent scrap rubber campaign in Canada yielded approximately 300,000 tons of rubber, Wilson said, and on a comparative basis it is reasonable to suppose that maybe we will get as much as three million tons of scrap.

Discussing the transportation situation, Wilson said all existing pipe lines are being utilized to the utmost and their capacities are being increased by installing additional pump stations and reversing directions of flow. In addition, under the supervision of the OPC, there are some six additional pipe lines now being constructed out of salvaged pipe and equipment which when completed will increase pipe line deliveries of about 80,000 barrels a day by an additional 210,000 barrels a day, at least as far as points on the Mississippi and Ohio rivers.

Wilson declared the only way the transportation deficit can be met, "to avoid shutting down war plants, and to say nothing of acute hardship when winter comes, is by construction of a large pipe line." He said it is hoped that by the time the Texas-Illinois "big-inch" line is finished the necessity for completing it to the East Coast will be so apparent that the steel will be made available to build it.

Huggins Heads California Conservation Committee

Paul Huggins, Western Gulf Oil Company, has been named chairman of the conservation committee of California Oil Producers, succeeding Lloyd Williamson, California Star Oil Company, who has served as temporary chairman since resignation of A. H. Bell, Continental Oil Company, several months ago.

Joseph Jenson, Tidewater Associated Oil Company, was elected first vice chairman; D. L. Caldwell, Barnsdall Oil

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OIL IS AMMUNITION ★ KEEP 'EM PRODUCING

Company, second vice chairman; and Henry Power, General Petroleum Corporation, secretary.

W. R. Wardner, Jr., who has been serving as assistant administrator, was appointed administrator for the committee, succeeding L. P. St. Clair. He has been a member of the staff of the administrator's office since formation of the California Voluntary conservation program in 1929.

Magnolia to Loop South Texas-Beaumont System

Magnolia Pipe Line Company will materially increase its facilities for movement of Southwest Texas crudes to its Beaumont refinery and terminal through installation of two groups of loops aggregating 107 miles of line. A 45-mile 10-inch loop, involving pipe to be salvaged from its Panhandle-Ranger carrier, will be installed on the Vanderbilt-Sealy junction 73-mile 8-inch system, currently rated at 17,000 bbls daily. The addition of a series of loops, aggregating 62 miles of 8-inch, to its Sealy-Luling-Beaumont trunk line will afford two complete 8-inch units, and boost the capacity from 42,000 to 50,000 barrels daily.

The company also transports Southwest Texas crude from Sealy Junction to Tomball, where connection is made with its Mid-Continent-Beaumont system, having built this 20,000-barrel capacity unit late last summer. It is understood that the new loops will enable the company to segregate crudes that yield essential war products.

Eleven Candidates for Texas Railroad Commission

Eleven candidates have filed their names for the Railroad Commission office vacated by Jerry Sadler. James E. Kilday, who for a time was the only candidate whose name was on the ticket, has lost two court fights in his attempt to have his opponents excluded from the race. It appeared last week unlikely that he would succeed in this effort.

The list which will go on the ticket follows: Clem Fain, state senator from Livingston; James E. Kilday, attorney from Houston; Karl Lovelady, state senator from Meridian; Buford Jester, attorney and independent oil man from Corsicana; Will Pace, attorney from Tyler; P. M. Armstrong, San Antonio; Pierce Brooks, real estate operator from Dallas; T. Leo Moore, Mayor of Electra; P. B. Patterson, drilling contractor of San Antonio; Richard Humphrey, attorney from Dallas; C. E. McCormick of Cameron County.

While there were eleven entrants, it appeared that the race would center around four candidates, Kilday, Jester, Pace and Brooks. The remainder seemed likely to find considerable difficulty in obtaining the support necessary to make a statewide race on short notice.

Because of his position in the Motor Transportation Division of the Railroad Commission for the past three years, Kilday has a wide acquaintance over the state. He has made many friends on his own account and will undoubtedly receive considerable support from friends of Sadler, whom he seeks to succeed. His court battle, following the refusal of Governor Coke Sterenvson to appoint him to the place, has injured his chances because of the unfavorable publicity.

Buford Jester is expected to receive the support of the largest group of substantial oil men who are anxious to see in office a man who is successful already in private life and who is really familiar with the oil problem. Jester has a long record as an outstanding attorney. He has served the state as a member of the Board of Regents of the University, and has operated as an independent oil man. He is sufficiently young to be active, yet has mature judgment.

Will Pace, while in the Texas Senate, had much to do with the passage of amendments to the proration laws, and has a wide acquaintance in Texas.

Pierce Brooks has made two state races, is expected to be a prominent candidate because of this and the fact that he was able to poll 400,000 in his last race, which was for the Railroad Commission post now held by Commissioner Culberson.

New Improved Aviation Gasoline Blending Agent

A readily available high octane blending ingredient, which it is said not only makes possible the production of a more powerful aviation gasoline fuel but also a greater output of this product, was announced last week by officials of Shell Oil Company, Inc.

It is possible, according to Shell officials, to convert certain types of existing plants over to the production of this essential product in a short time. Shell already has one plant, which required only three weeks to change over, producing this synthetic, and alterations are under way at another plant due to be completed by the end of June. This was made possible by the promptness of WPB and OPC in granting priorities covering the allocation of necessary materials.

The new product is said to have an exceptional anti-knock quality in the super-charged aviation engines, making possible quicker take-offs for this country's pursuit and interceptor planes and the ability to carry heavier loads in bombers.

Shell is contributing its technique on the process to the industry through OPC, and it is understood that arrangements for conversion of additional units are being made at present.

Texas Recycling Plant Hearing Set for June 27

An emergency hearing to consider revision of its new recycling plant order was called by the Texas Railroad Commission last week and set for Saturday, June 27. The order in question requires metering of all products of the plant and limits the flash vapor losses to two percent.

At the statewide hearing held June 16, one operator complained that he could not obtain the equipment necessary to conform to the order, which is scheduled to become effective July 1. Several meters are required, and because of the war these could not be obtained. Other operators complained of similar difficulties.

It was necessary for other plants to install additional compressors. It is not only difficult to obtain these units, but the Federal Government has asked for an inventory of them in order to determine whether some could be turned in.

Magnolia to Cotton Valley Line Finished

Atlas Pipeline Company of Shreveport has completed construction of a six-inch line from the Magnolia, Arkansas, field to the Cotton Valley area of Webster Parish, Louisiana. It is planned to run 6000 barrels of crude daily through the line.

License Plates Scrap Brings in 60 Tons

A get-in-the-scrap campaign in which 8000 dealers of The Atlantic Refining Company in Pennsylvania and New Jersey participated resulted in the collection of more than 60 tons of old license plates over a 14-day period, as announced by Wayne C. Yeager, vice president of the company.

Proceeds of the scrap sale, amounting to $505.41, were to be turned over to the chairman of the National USO Campaign, the license plate collection thus aiding the steel industry through nearly two cars of scrap which otherwise would have been thrown away, and contributing effectively to the operating fund of USO.

California Intensifies Scrap Collection

California's oil industry salvage committee has initiated an intensive drive for scrap metals to add to the nation's stock pile for use in producing steel and alloys for the war effort.

Critical nature of the scrap situation and the important contribution that can be made to the war effort through cooperation of the industry in California was called to the attention of California oil operators recently by M. R. Singleton, salvage director for the petroleum industry, Bureau of Industrial Conservation, WPB.

Singleton cited statistics pointing out that in ordinary times, scrap metal accounts for anywhere from 25 to 50 percent of the country's steel production. For example, it took 26,000,000 to 27,000,000 tons of iron and steel scrap to produce the steel tonnage turned out in 1941. Now, to produce the 100,000,000 tons needed for this year, there must be made available approximately 35,000,000 tons of scrap metal. In the operation of a steel mill, the character of the steel produced dictates the amount of scrap necessary to make that particular quality of product. A scrap charge of 100 percent is necessary in the production of some alloys.

It was pointed out that it takes 2000 tons of ship plate and 300 tons of structural steel to make a 10,000-ton merchant ship, on which there is an extensive building program on the West Coast.

The estimated shortage in scrap during the balance of the current year runs to nearly 6,000,000 tons. Nine open-hearth furnaces are closed down for lack of scrap metal.

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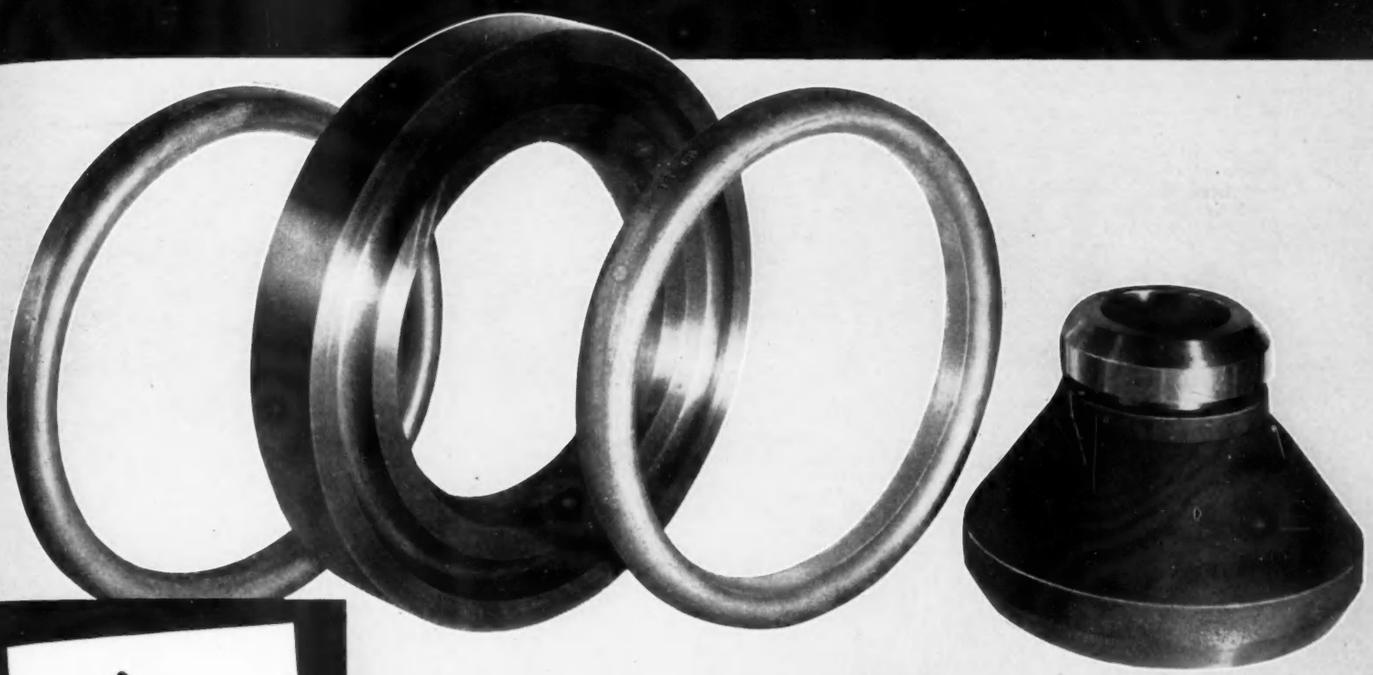
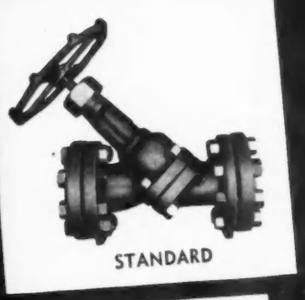
in Hunt All-Steel Line Valves





STANDARD

HEAVY-DUTY

HUNT *All-Steel Line Valves* feature a reversible disc and seat of stainless steel, which gives double the life of ordinary valves. The seat, or ring, is of a lower Brinell Hardness than the disc, assuring positive seal as the disc and seat wear. The same disc and seat will fit any of the various valves of the same size, whether screwed or flanged.

The construction of Hunt All-Steel Valves is such that it is unnecessary to remove the valve from the line to reverse or renew the seat or valve. Simply remove the flange bolts, and raise the bonnet sufficiently to clear the seat. Valves can be repacked under pressure, as bonnet top has a machined recess which seals the valve around the stem when it is in full open position.

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Meager Stocks of Fuel Oils Further Reduced

Latest weekly statistics of the industry, covering the period from June 6 to June 13, showed a moderate increase in crude runs to stills, but output of refined products remained barely equal to current consumption, and figures on stocks leaned toward the unfavorable rather than the favorable side.

Especially significant was a contra-seasonal withdrawal of light fuel oil from storage, which left stocks of that product nearly 6,000,000 barrels (15½ percent) lower than a year ago. The draft on stocks at a time when normally there would have been a substantial addition gave further warning that serious difficulty is in store in connection with meeting heating requirements next winter.

Similar results were shown as regarded heavy fuel oils, as stocks of those oils were further reduced by over three quarters of a million barrels, although already too low. The nation now has 13,000,000 barrels (14 percent) less of residual fuel oil in storage than it did a year ago, whereas requirements are materially greater, because of large consumption by war industries as well as the Navy.

Less significant was the withdrawal of about 1¼ million barrels of gasoline from storage, as stocks of that product normally come down at this time of the year. There is in storage now about ½ million barrels more than at this time last year, whereas demand is lower because of rationing and tire conservation. Consequently, gasoline stocks are larger than necessary except in the East Coast district.

Crude oil stocks showed no substantial change in the week ended June 6, latest report of the Bureau of Mines revealed, and the total of 254,316,000 barrels was 6,640,000 barrels under that of 260,956,000 barrels reported on the corresponding date last year.

Difficulty in meeting demand for petroleum products, because of inadequate transportation and other reasons, continues in evidence on the West Coast as well as the East Coast. California refineries stepped up runs to stills by 58,000 barrels to a new high for the year of 640,000 daily in the week ended June 13, and were operating at 81.3 percent of rated capacity. Nevertheless, with the week's increased charging of crude to stills not yet fully reflected, there were substantial withdrawals of all the principal products from storage in meeting demand. Stocks of finished and unfinished gasoline were lowered 144,000 barrels to 16,936,000, and there were withdrawals of 199,000 barrels of gas oil and distillate fuel and 414,000 barrels of residual fuel oil, as inventories of the two latter products declined to 11,445,000 and 55,901,000 barrels respectively.

The Rocky Mountain states showed no noteworthy changes in stocks, as runs to stills increased by 16,000 barrels daily.

Principal change in stocks in Oklahoma-Kansas-Missouri was an addition of 148,000 barrels of gasoline, with daily average crude runs up 6000 barrels.

The Indiana-Illinois-Kentucky district reduced runs to stills by 16,000 barrels daily and showed a decrease in gasoline production with a resultant withdrawal from storage, but added 118,000 barrels of light fuel oil and 35,000 of heavy fuel oil.

The Appalachian district lowered daily crude runs 5000 barrels and took 314,000 barrels of gasoline from storage as well as 45,000 barrels of residual fuel oil but increased light fuel oil stocks 18,000 barrels.

For the East Coast distict and Texas, Arkansas, and Louisiana combined (because of the war), figures for the week of June 13 indicated a reduction of refinery runs by 32,000 barrels to 1,556,000 daily, equivalent to 65.3 percent of capacity. Gasoline production was up 11,000 barrels daily, but stocks of that product were lowered 235,000 barrels (33,000 daily). There were withdrawals, meanwhile, of 207,000 barrels of gas oil and distillate fuel and 269,000 barrels of residual fuel oil.

Markets Continue Strong; Rationing Still Threat

Markets for petroleum and products continue generally firm, with production of crude cut back in Texas for latter half of June while in the East, Middle West, and Mid-Continent there are either shortages or scarcities of finished goods.

In the two latter areas there is not, however, any disposition on part of refiners to hold back supplies for either higher prices or contingencies, as the threat of national rationing of gasoline remains, although temporarily submerged by the rubber salvage campaign; and suppliers want to avoid having on hand excessive quantities if and when obliged to restrict deliveries.

On the East Coast, the shortage of all products remains pronounced, and it is not possible to make any substantial additions to stocks of either gasoline or heavy fuel oil, while supplying the current market requirements. It is possible to provide some build-up in stocks of heating oil only because deliveries to jobbers are officially restricted.

No improvement in the inactive market of the Gulf Coast has occurred, in apparent reflection of continued virtual absence of coastwise shipments by tanker.

All products are in strong demand in the Mid-Continent, with Diesel oil especially sought, in connection with agricultural activity. Inventories of all products are relatively light. Demand for gasoline is reported very good. Shipments to the East continue an important factor, although there remains a scarcity of tank cars for shipping into that region.

Refiners and marketers of the Middle West are encountering steady demand for all refined products. Fuel oil continues to be urgently sought, while heating oil is readily absorbed. This district is regarded as being especially in danger of having to go onto gasoline rationing, if extension of marketing restrictions is found necessary.

Western Pennsylvania refiners retain their strong market position arising from the East Coast shortage and the large wartime requirements for lubricants. All refined products are being shipped from plants as rapidly as manufactured, with heavy current demand permitting no storage for future needs.

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.

ITEM	Crude Oil Prod. Bbls. Day (Add 000)	Crude Oil Prod. Week Ended	Runs to Stills Bbls. Day (Add 000)	Runs to Stills Week Ended	Crude Stocks Bbls. (Add 000)	Crude Stocks Week Ended	Gasoline Stocks Bbls. (Add 000)	Gasoline Stocks Week Ended	Gas Oil & Distillate Stocks Bbls. (Add 000)	Gas Oil & Distillate Stocks Week Ended	Residual Fuel Oil Stocks Bbls. (Add 000)	Residual Fuel Oil Stocks Week Ended
Highs:												
1939	3,910	8- 5	3,650	10-21	278,607	5-26	87,769	4-22	39,562	10-28	116,237	8-26
1940	3,890	3-16	3,690	6-22	265,865	8-31	102,817	4-20	49,051	10-19	109,135	9-14
1941	4,337	11-22	[1]4,120	10-18	266,187	3-29	99,727	3-29	[1]54,983	11-15	102,448	1- 4
1942	[1]4,337	2- 7	3,961	1- 3	263,208	3-28	[1]107,229	3-14	49,357	1- 3	95,857	1- 3
Lows:												
1939	[3]1,601	8-26	3,125	2-18	[2]229,127	10-21	71,152	10- 7	20,722	4-15	105,397	4- 8
1940	3,335	11-30	3,370	1- 6	237,339	1-27	79,847	11- 9	23,551	4- 6	102,344	2-10
1941	3,364	1-11	3,490	1-18	240,399	11-15	80,870	10- 4	28,381	4-12	92,635	7- 5
1942	3,418	5- 2	3,393	5-23	244,364	1-10	91,994	6-13	29,240	4-25	78,759	6-13
Trends in 1942 (Week Ended):												
Jan. 3	4,038	.....	3,961	.....	244,440	.....	92,987	.....	49,357	.....	95,857	.....
Jan. 31	3,871	.....	3,848	.....	250,740	.....	97,810	.....	40,674	.....	91,189	.....
Feb. 28	4,016	.....	3,675	.....	259,373	.....	105,635	.....	34,547	.....	88,285	.....
Mar. 28	3,820	.....	3,667	.....	263,208	.....	105,624	.....	31,756	.....	83,045	.....
April 25	3,581	.....	3,506	.....	257,073	.....	102,897	.....	29,240	.....	81,107	.....
May 30	3,877	.....	3,522	.....	255,023	.....	95,355	.....	31,384	.....	79,628	.....
June 6	3,602	.....	3,451	.....	254,316	.....	93,305	.....	31,535	.....	79,556	.....
June 13, 1942	3,700	.....	3,478	.....	.....	.....	91,994	.....	31,276	.....	78,759	.....
June 13, 1941	3,823	.....	3,782	.....	[4]260,956	.....	91,431	.....	37,019	.....	91,700	.....
Change:												
In week	+98	.....	+27	.....	—707	.....	—1,311	.....	—259	.....	—797	.....
In year	—123	.....	—304	.....	—6,640	.....	+563	.....	—5,743	.....	—12,941	.....
In year	—3.2%	.....	—8.0%	.....	—2.5%	.....	+0.6%	.....	—15.5%	.....	—14.1%	.....

[1] All time peak. [2] Lowest since April, 1922. [3] Lowest since October, 1922, due to shutdown of six Mid-Continent states. [4] Stocks, June 7, 1941.

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. . . "4,600 ft. through sharp sand in southern Louisiana."

. . . "925 ft. of sandy shale at Lomita, California."

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Daily Crude Production Up 33,400 Barrels

United States oil production averaged 3,735,925 barrels daily during the week ended June 20. That figure was 33,400 above the 3,702,525 barrels per day in the preceding week and 99,625 barrels in excess of the daily average production recommended for June by the petroleum coordinator.

Most of the leading producing states showed increases. Arkansas averaged 73,750 barrels daily, up 650; California 672,800 against 669,700 daily the week before; Illinois 280,150, compared with 278,300; Kansas 279,850, against 279,750; Louisiana 308,450 compared with 307,600; Michigan 69,650 against 65,350; New Mexico 65,600 against 55,200; Oklahoma 377,600 compared with 375,650; and Texas 1,280,950 compared with 1,268,500. Mississippi was down to 81,600 barrels a day from 82,200.

Production, Runs, Demand Dropped Sharply in April

Rapidly contracting gasoline markets accelerated the downward trend of crude production in April, but the drop in crude output was greater than that in runs to stills, necessitating the first withdrawals of crude from storage in six month, it was reported June 17 by the Bureau of Mines.

Daily average crude production, which dropped from 3,702,700 barrels in April, 1941, to 3,501,800 barrels in the same month this year, declined 191,100 barrels from March, 1942, alone, it was sown. Total output for the month was 105,053,000 barrels, compared with 114,473,000 barrels in March and 111,080,000 barrels in April a year ago.

With runs to stills decreasing at a slower rate, withdrawals from stocks carried the storage inventory down to 257,761,000 barrels on April 30, compared with 266,012,000 barrels on the same date last year. Runs to stills, however, were at the lowest figure since July, 1940, with a daily average of 3,496,000 barrels, the bureau stated. The gasoline yield declined 1.9 percent to 39.9; the distillate yield 1.3 percent to 13.4, but the residual yield increased 2.7 percent to 28.1.

Demand Declines

"The total demand for motor fuel in April was about 52,200,000 barrels, or eight percent below a year ago," the report commented. "This marks the first time since 1938 that the demand for any month has not surpassed that of the same month in the previous year. The largest factor in this decline was the decline in District 1, because of tire conservation and dealer rationing, with tire conservation elsewhere becoming an increasingly important factor. Stocks of gasoline reacted to the severe decline in production and decreased about 4,500,000 barrels, an abnormally high figure for April.

The demand for fuel oil, both light and heavy, ran well ahead of last year. The demand for wax continued strong, which coupled with the drop in output due to decrease crude runs tightened an already serious inventory position."

Nearly all the crude decline in April was in Texas, with gains in California, Michigan and a few other states nearly compensating for losses in Louisiana, Illinois, Oklahoma and several others, the bureau said. Illinois production was just above the 300,000-barrel mark, but Oklahoma fell below 400,000 barrels.

The skeletonized statistical report issued by the bureau under war conditions showed April production of natural gasoline at 6,257,000 barrels, and no production of benzol, which, with the crude output, made a total production of 111,310,000 barrels, or 3,710,000 barrels a day.

The stock report showed: Refinable in U. S., 257,761,000 barrels; heavy in California, 11,434,000; natural gasoline, 6,043,000, and refined products, 257,518,000, a total, all oils, of 532,756,000 barrels.

Bureau of Labor Statistics indices placed the price for petroleum and products in April at 58.4, compared with 58.3 in March and 51.9 in April, 1941. The crude-oil capacity represented in the report was 4,673,00 barrels, giving an operating ratio of 75 percent, compared with 76 percent in March and 85 percent in April, 1941.

Petroleum Production in the United States

(Estimates compiled by The Oil Weekly. All figures indicate daily averages, in barrels)

STATE OR DISTRICT	[1]OPC Allocation in June	PRODUCTION IN WEEK ENDED June 13	June 20
Arkansas	75,300	73,100	73,750
California	691,900	669,700	672,800
Long Beach		37,400	37,100
Midway-Sunset		60,500	56,800
Kettleman Hills		41,400	36,800
Wilmington		88,700	89,500
Rest of State		441,700	452,600
Colorado	7,600	7,000	7,100
Illinois	320,800	278,300	280,150
Salem		44,600	44,450
Louden		48,450	51,650
Other New Pools		173,350	171,900
Old Pools		11,900	12,150
Indiana	18,900	22,050	20,100
Kansas	281,900	279,750	279,850
Kentucky	13,000	12,600	12,300
Louisiana	311,300	307,600	308,450
North Louisiana		87,200	88,700
South Louisiana		220,400	219,750
Michigan	63,100	65,350	69,650
Mississippi	49,200	82,200	81,600
Missouri		130	130
Montana	23,400	21,350	22,550
Nebraska	4,100	3,900	3,850
New Mexico	80,600	55,200	65,600
New York	14,900	12,200	13,250
Ohio	10,100	9,850	9,650
Oklahoma	436,600	375,650	377,600
Oklahoma City		69,250	73,950
Seminole Area		95,100	93,900
Rest of State		211,300	209,750
Pennsylvania	51,000	52,650	53,450
Tennessee		30	30
Texas	[2]1,068,600	1,268,500	1,280,950
Upper Gulf Coast		244,400	242,850
East Texas Field		362,500	362,450
Rest of Eastern Texas		87,800	94,150
Lower Gulf Coast		77,100	83,650
Southwest Texas		38,300	44,350
South Central Texas		15,600	15,850
West Texas		205,200	205,050
North Texas		150,100	143,900
Panhandle		87,500	88,700
Utah		15	15
West Virginia	17,800	8,700	9,750
Wyoming	96,200	96,700	93,350
Total United States	3,636,300	3,702,525	3,735,925

[1] Production rates recommended for states by Office of Petroleum Coordinator, on basis of Bureau of Mines forecast of the nation's daily average requirements for domestic crude during month. State conservation authorities except Texas Railroad Commission have prescribed allowables calculated to hold actual production within OPC regulations. (Details on state allowables published in The Oil Weekly of June 8, 1942, page 47.)

[2] Actual production of crude oil and other petroleum liquids in Texas expected to average 1,209,340 barrels daily in period June 15-June 30, under railroad commission order, taking into consideration shutdowns in most fields of June 20, 21, 28, 29, and 30; East Texas field will be closed in on those days and in addition on June 23 and 27.

Drop in Natural Gasoline Production During April

Production of natural gasoline and allied products again dropped in April, averaging 8,760,000 gallons a day against 9,511,000 gallons in March, the Bureau of Mines reported June 18.

Total output for the month was 262,794,000 gallons against 294,840,000 gallons in March, with the most outstanding decreases in Texas, where production in some cycle plants was reduced.

Production for the month included 161,490,000 gallons of natural gasoline, 47,754,000 gallons of cycle products; 8,358,000 gallons of iso-butane at natural gasoline and cycle plants; 45,192,000 gallons of liquefied petroleum gas at natural gasoline and cycle plants and 12,768,000 gallons of liquefied refinery gas at refineries.

Stocks of all light products decreased in the eastern states but continued to increase in the central and western states. Stocks at refineries increased during the month from 101,556,000 to 101,682,000 gallons and at plants and terminals from 134,484,000 to 152,124,000 gallons.

Colombia Field Getting Pipe Line Connection

Construction is under way on a small 6-mile pipe line to connect Colombian Petroleum Company's Tres Bocas area with the trunk line running from the company's North Petrolea field to Covenas. Tres Bocas wells No. 1 and 2-A are producers, and No. 3 is drilling around 3000 feet. The area is northeast of the Petrolea-Covenas pipe line and about 12 miles northwest of the North Petrolea field.

Superior Oil Starts Testing New Zealand Holdings

After several months of survey work Superior Oil Company of New Zealand has begun a drilling program at an undisclosed point in New Zealand. The Ministry of Mines has revealed that the company has obtained necessary priorities for drilling equipment from United States. Production in New Zealand last year was under 3000 barrels of oil.

Superior Oil Company holds prospecting rights in Dannevirke, Taihape and Manawatu areas on the north island. Several rigs are reported operating in the Manawatu region.

Argentina Trying to Buy Seven French Tankers

That Argentina is negotiating with French officials for purchase of seven tankers lying at Martinique is confirmed by a member of Y.P.F., Argentine government oil agency, according to a dispatch from Buenos Aires. A spokesman for the French embassy at Buenos Aires denied the report, although the newspaper Critica recently said the German government had consented to sale of the tankers provided they would not be used in trade with the United Nations.

Argentina, which normally imports about two-thirds of its annual oil consumption, has been severely handicapped by lack of tanker transportation.

U. S. Field Operations

Illinois Basin

Two Wildcats Prepare To Test McClosky Shows

Richland County wildcat finds good McClosky show; White County wildcat sets pipe on McClosky; Wayne wildcat flows 990 in 24 hours.

Richland County: Gulf and Helmerich and Payne's C. F. Stiff heirs 1, SE NE NE 35-5n-10e, waiting on cement with 5½-inch casing on McClosky 2990-3004 ft. Test had Renault 2887 ft; Aux Vases formation 2899 ft; Aux Vases sand 2914-42 ft; St. Genevieve 2946 ft; Fredonia 2987 ft. Is mile southeast of village of Dundas and about two miles from production.

White County: White Eagle Oil Co. and F. H. Brown's J. Britt 1, NE NW SE 23-5s-9e, half mile southwest of Carmi, waiting on cement with pipe on McClosky at 3148-60; four miles from production. On 30 minute drill stem test of Cypress, 2800-46 ft recovered 40 feet oil cut mud, no water; on 45 minute drill stem test of Aux Vases 3083-3101 recovered scum of oil and 40 feet of drilling mud. Townsite drilling probably impossible because of M-68.

Wayne County: Deep Rock Oil Company's L. A. Blackburn 1, C NW NE 30-1s-7e, 4½ miles northwest of Fairfield, flowed 992 bbls through casing from McClosky topped 3238 ft while being deepened to second break in formation. Test opens pool three miles from other production. First offset, Gulf's Winona 1, NE NE 30-1s-7e, drilling 3130.

Clay County: Duncan's Jess Partridge 1, C SE SE 2-3n-7e, offset pool opening J. Hal Jones Neely 1, waiting on cement with casing on McClosky 2947-55; flowed for 90 minutes during drill stem test and appears to be most promising test drilled in area since completion of the discovery well.

Franklin County: Jack Darnell's Old Ben Coal Co. 1, NE NE 20-5s-2e, half mile from Ike Taylor's Old Ben 1, recently completed as pool opening well, pumped 32 barrels of oil and 11 barrels of water natural in 24 hours from Aux Vases 2704-11.

Hamilton County: Cameron Oil Co.'s Roth 1, half mile west of Hoodville pool, C SW NE 4-6s-6e, shut down on orders after hole filled with water and show of oil when plug was drilled to Aux Vases 3117-40.

Jefferson County: Lewis Production Co.'s State Game Farm 1, SW SW SE 21-3s-3e, pool opener four miles south of Mt. Vernon, completed in Aux Vases 2642-62, pumped 55 barrels of oil in 24 hours natural.

Kentucky: Carter and Moran's E. W. Reid 1, C S½ 25-P-27, Henderson County wildcat half mile from production near Hebbardsville, swabbed 14 barrels of oil in six hours from McClosky at 2032-37 feet, natural without acid.

Indiana: Jarvis Brothers and Marcell's K. Walker 1, C E½ NW SE 33-6s-12w, Posey County wildcat about two miles from production, was drilling at about 2680 feet, in or near Aux Vases section, reported running favorably high structurally.

Results on Industry's Prospecting Fronts

Michigan: Missaukee County wildcat has promising show.

Illinois: Two wildcats, one in Richland and other in White County, have set pipe to test McClosky shows. Wayne County wildcat flows 992 barrels from McClosky.

East Texas: Woodbine faulted structures in Hunt and Navarro counties have prospective discoveries. Chapel Hill gets first Rodessa limestone formation producer.

North Louisiana: Concordia Parish wildcat reported flowing high grade oil from Wilcox sand.

North Texas: Mississippi lime discovery due to stimulate prospecting in western Young County.

Texas Gulf Coast: Frio sand field opened in Jennings Lake area, Matagorda County; Cockfield sand strike made in Hampton area of Hardin County.

Kansas: Viola lime found productive near Sterling, in Rice County.

Oklahoma: A new gas field in McIntosh County, and a Wilcox pool opener in Noble County.

ILLINOIS FIELD COMPLETIONS

Bond County—Hudson & Hess' Hughey 1, nw sw sw 10-6n-2w, abnd 1301 ft.

Clay County—Illinois Prod. Co.'s Veith 1, nw se sw ne 5-5n-7e, McCl. 2808-12 ft, 2813-18 ft, 66 bbls, 2837 ft.

Pure Oil Co.'s Zander 1, nw nw se 8-5n-7e, abnd 2907 ft.

Clinton County—The Texas Co.'s Murphy 1, c ne nw ne 2-2n-2w, pay 1195-1221 ft, 299 bbls, 1221 ft.

Edwards County—Magnolia's Brake 1, ne sw 31-2n-14w, Pt. Creek 2953-70 ft, 47 bbls, 3240 ft.

R. Congden's Hocking 1, c w½ ne sw 7-1s-11e, McCl. 3223-32 ft, 112 bbls, 3232 ft.

Hamilton County—Shell Oil Co., Inc.'s Ohio Bureau of Credits 1, se se nw 14-6s-5e, L. O'Hara 3242-56 ft, 12 bbls, 3440 ft.

Shell Oil's Dailey 10, nw ne 12-6s-6e, Aux Vases 3020-44 ft, 81 bbls, 3056 ft.

Shell-Pure's Rawls 1, ne sw se nw 12-6s-6e, Aux Vases 3023-53 ft, 143 bbls, 3065 ft.

Pure Oil Co.'s Phillips 1, nw nw nw 6-6s-7e, Aux Vases 3014-30 ft, Pt. Crk. 2930-37 ft, 417 bbls, 3030 ft.

The Texas Co.'s Miller 1, ne ne sw 8-6s-7e, abnd 3075 ft.

Jasper County—Standard Drlg. Co.'s Pechler 1, c e½ ne nw 7-5n-10e, McCl. 2851-61 ft, 104 bbls, 2863 ft.

Marion County—Lewis Lilly's Leonard Estate 2, c se ne ne 17-1n-1e, pay 1648-1665 ft, 70 bbls, 1670 ft.

Richland County—Pure Oil Co.'s Hasler A-1, sw sw 22-4n-9e, abnd 3035 ft.

Wayne County—Gulf Refining Co.'s Ellis 2, ne sw ne se 18-1s-5e, pay 2933-67 ft, 743 bbls, 2967 ft.

The Texas Co.'s Thomas, Tr 1, 23 ft s of c w½ se nw 27-1s-6e, pay 3162-94 ft, 573 bbls, 3194 ft.

The Texas Co.'s Richards 1, sw ne se se 29-1s-6e, abnd 3175 ft.

White County—Longhorn Oil Co.'s Helm 27, se sw ne 22-3s-14w, Cyp. sd 2500-19 ft, Bethel sd 2641-48 ft, 250 bbls, 2792 ft.

W. C. McBride's, Inc.'s Peters 1, sw ne nw 34-4s-9e, abnd 3456 ft.

Skelly Oil Co.'s Barbee B-1, nw ne 18-4s-10e, pay 2460-2513 ft, 255 bbls, 3224 ft.

Seaboard Oil Co.'s Calvert 1, c n½ nw ne 33-6s-10e, abnd 3069 ft.

ILLINOIS OLD WELL DEEPENED

Clay County—J. Hal Jones et al's Neeley 1, ne nw ne 11-3n-7e, McClosky 2940-45 ft, 508 bbls, 2958 ft.

ILLINOIS WILDCAT COMPLETIONS

Crawford County: Failure—Curtis Oil Co.'s Lingafelter 1, nw se ne 8-8n-13w, abnd 1260 ft.

Edwards County: Failure—Sun Oil Co.'s

U. S. Drilling Operations in Week Ended June 20, 1942

STATE	ALL WELLS COMPLETED — THIS WEEK: Total	Oil	Gas	Dry	*Miscel.	Total 1942	Total this Date 1941	WILDCATS COMPLETED‡ — THIS WEEK: Total	Oil	Gas	Dry	Distillate	Total 1942
Alabama	....	....	....	....	....	3	1	....	....	....	....	....	3
Arkansas	3	2	....	1	....	66	77	....	....	....	....	....	7
California	6	3	2	1	....	338	510	1	....	....	1	....	12
Colorado	1	1	....	....	....	5	7	....	....	....	....	....	....
Georgia	....	....	....	....	....	2	....	....	....	....	....	....	2
Illinois	34	17	....	16	1	845	1,560	12	3	....	9	....	239
Indiana	2	....	....	2	....	187	236	1	....	....	1	....	31
Iowa	....	....	....	....	....	....	2	....	....	....	....	....	....
Kansas	28	17	3	6	2	753	993	3	1	....	2	....	171
Kentucky	1	....	....	1	....	64	140	1	....	....	1	....	9
Louisiana	15	9	....	5	1	506	645	5	1	....	4	....	73
Michigan	15	6	3	6	....	318	373	5	2	....	3	....	78
Mississippi	2	....	....	2	....	65	86	....	....	....	....	....	18
Missouri	....	....	....	....	....	15	32	....	....	....	....	....	....
Montana	5	4	1	....	....	79	89	....	....	....	....	....	....
Nebraska	....	....	....	....	....	25	38	....	....	....	....	....	11
New Mexico	4	2	....	2	....	192	158	1	....	....	1	....	12
New York	26	14	....	....	12	546	365	....	....	....	....	....	1
Ohio	20	4	12	3	1	517	743	....	....	....	....	....	....
Oklahoma	26	7	1	12	6	734	969	7	1	....	6	....	136
Pennsylvania	46	39	4	2	1	1,429	1,837	....	....	....	....	....	....
Tennessee	....	....	....	....	....	2	9	....	....	....	....	....	....
Texas	97	61	5	24	7	3,073	4,539	17	1	2	14	....	524
Virginia	....	....	....	....	....	1	....	....	....	....	....	....	....
West Virginia	15	3	9	1	2	337	310	....	....	....	....	....	....
Wyoming	1	1	....	....	....	35	50	....	....	....	....	....	2
Total this week	347	190	40	84	33	10,137	13,769	53	9	2	42	....	1,329
Total last week	350	197	33	96	24	9,790	13,161	51	10	....	41	....	1,276
Total this year	10,137	5,830	813	2,572	922	.....	.....	1,329	166	17	1,140	6	.....

* Includes old wells deepened, water intake, gas input, salt water disposal, and distillate wells.
‡ OPC program calls for 4,000 wildcats in 1942, of which 624 should produce oil and 116 gas, leaving 3,260 dry.

McKibben 1, c e½ se se 19-2s-10e, abnd 3393 ft.

Franklin County: New Field—I. W. Taylor's Old Ben Coal 1, se ne nw ne 19-5s-2e, pay 2701-08 ft, 132 bbls, 2716 ft.

Hamilton County: Failure — George L. White's Schnuck 1, 60 ft w of c s½ sw se 35-3s-6e, abnd 3452 ft.

Hamilton County: Failure—Whisenant & Trenchard's Hungate 1, se nw 11-6s-5e, abnd 3353 ft.

Jasper County: Failure—A. J. Foster's Link 1, sw ne sw 9-7n-14w, abnd 1230 ft.

Jefferson County: Failure—Shell Oil Inc.'s Schmidt 1, nw nw se 25-2s-1e, abnd 2366 ft.

Madison County: New Field—M. D. Bryant et al's Meyer 1, sw ne se 16-3n-6w, pay 2341-2343 ft, 118 bbls, 2354 ft.

Montgomery County: Failure—Papoose Oil Co.'s Whitten 1, nw nw nw 10-7n-2w, abnd 1290 ft.

Wayne County: Failure—W. E. Hupp et al's Farris 1, c n½ se nw 34-1n-8e, abnd 3281 ft.

Wayne County: Failure—Emil Burvard et al's Mumme 1, sw sw sw 4-2s-6w, abnd 978 ft.

Wayne County: New Field—The Texas Co.'s Talbert 1, sw ne se nw 29-1s-6e, McCl. 3148-84 ft, 49 bbls, 3184 ft.

ILLINOIS WILDCAT STARTS

Clinton County—F. E. Webb et al's Boeker 1, nw se ne ne 12-1n-2w, dr.

Coles County—B. F. Williams' Gwin 1, ne ne nw 33-12n-9e, lcn.

E. C. Baker et al's Cox 1, se ne se 3-13n-7e, dr.

Edwards County—F. C. Yingling et al's Perkins 1-A, 100 ft e of sw sw sw 2-3s-10e, dr.

Effingham County—A. H. Gibson's Campbell 1 nw ne 10-6n-5e, dr.

N. V. Duncan's Thoele 1, ne sw 3-8n-7e, lcn.

Gallatin County — Sinclair-Wyoming's Cox 1, sw sw sw 24-7s-8e, lcn.

Richland County — Dawson & Martin's Smith 1, c e½ sw se 22-2n-10e, dr.

Washington County—Gulf Oil Co.'s Leffner 1, nw ne nw 13-3s-2w, lcn.

Wayne County—Pure Oil Co.'s Mawel 1, se nw 26-1n-8e, lcn.

White County—J. L. Taylor's Buchman 1, sw sw sw 9-5s-9e, lcn.

Randall & Brown's Britt 1, ne nw se 23-5s-9e, dr.

KENTUCKY WILDCAT COMPLETION

Daviess County: Failure—Ohio's Faxon 1, 13-O-31, abnd 1446 ft.

KENTUCKY WILDCAT STARTS

Henderson County—P. J. Reilly et al's Rush Hrs. 3, 6-P-27, lcn.

Muhlenburg County—Margaret Hobson et al's Glenn 1, 16-G-28, dr.

INDIANA FIELD COMPLETION

Gibson County—Kingwood's Hays 1, 110-1n-10w, abnd 1913 ft.

INDIANA WILDCAT COMPLETION

Posey County: Failure—Smokey Oil Co.'s McCarty 1, 80 ft n of ne nw sw 17-7s-12w, abnd 2761 ft.

INDIANA WILDCAT STARTS

Jennings County—Ohio Valley Oil Co.'s Phillips 1, se ne nw 30-7n-8e, lcn.

Porter County—Wm. H. Moulton's Dell 1, sw sw ne 1-33n-7w, lcn.

Posey County—Clark C. Nye et al's Klenck 1, c ne nw 23-5s-12w, lcn.

The Carter Oil Co.'s Duckworth 1, c sw se 6-6s-13w, lcn.

Wabash County—Ohio Oil Co.'s Wathen 1, 10 ft n of sw sw nw 11-26n-6e, lcn.

Oklahoma

Oil Strikes in Noble and Gas Find in McIntosh

Small gas well opens field in McIntosh County; Wilcox field discovery for Noble County; another field apparently in making for southern Oklahoma; Pauls Valley draws three locations.

McIntosh County: Phillips Petroleum Co.'s S. Checotah 1, C SE SW 16-11n-17e, off southeast flank of central Oklahoma uplift, found Wilcox sand tight and without showing oil but 3,500,000 cu ft gas on open flow was developed when test was plugged back to Kinta section, 1522-32 ft. Wilcox was logged at 2982 to 2992 ft.

Noble County: Danciger Oil and Ref. Co.'s Province 1, C NW SW 4-20-2w, on Lucien trend but two miles east of production in that field, has tested 20 barrels hourly from Wilcox, 5394-5400 ft. A west location is to be started.

Pottawatomie County: West Hotulke field continues to add producers, last being C. Sharp's Hudson 2, CSE NE 28-9-4e, perforated opposite Hunton, 4277 ft top, treated with 2500 gallons and tested 40 bbls hourly.

Garvin County: The Pure Oil's Pauls Valley pool has three new locations, all Pure Co., and all in section 31-4n-1e. They are Cashion-Teter 1, SE SW NE; Teter 7, SE NE SW, and Teter 8, SE NE NW, all east of field production. Teter 5, west edge of production, has tested salt water but is drilling deeper.

Carter County: The Pure Oil's Fraser 1, SW NE SW 26-3s-1e, on a wildcat block near Springer blew out from Viola lime at 4486 ft and apparently indicates another southern Oklahoma strike for the firm. Operator is now conditioning hole after killing gas with mud.

OKLAHOMA FIELD COMPLETIONS

Comanche County: Lawton—A. J. Price's Japp 1, ne sw sw 34-2n-11w, top lime 850 ft, hole full water, abnd 1015 ft.

Creek County: E. Tuskegee—Bruin's Harjo 1-A, se sw nw 28-14n-10e, Dutcher 2710-15 ft, flow 75 bbls, 2718 ft.

Creek County: Glenn—Gulf Oil's Vowell's 34, 95 ft w of ne sw 16-17n-12e, Glenn sand 1422-1585 ft, input well 1590 ft.

Sinclair Prairie's Berryhill 42, se nw se 16-17n-12e, Glenn 1415-82 ft, input well 1586 ft.

Garvin County: Pauls Valley—Pure Oil's Teter 3, se nw nw 31-4n-1e, Wilcox 3845 ft, pay 3968 ft and 3991 ft, flow 2328 bbls, 4037 ft.

Kiowa County: Hobart—Bud Lewis' Jones 1, sw sw ne* 29-7n-17w, Sylvan 1150 ft, abnd 1163 ft.

Marshall County: Cumberland—Pure Oil Co.'s Little (101) 4, se se sw 28-5s-7e, McLish 5465 ft, top sand 5832 ft, flow 357 bbls, thru 1½-in tbg choke, 5960 ft.

McIntosh County: Unnamed—J. E. Weible's Smith 3, nw se sw se 32-9n-16e, lime 1341-72 ft, abnd 1377 ft.

McIntosh County: Fields — Phillips Pet.'s Checotah 1, se sw 16-11n-17e, 2nd Atoka Lime 1494 ft, perf csg, 3.4 gas, rock pressure 372 lbs, pb 1905 ft, td 2992 ft.

Okfuskee County: N. Baltimore — W. R. Staples' Tee 1, nw se se nw 13-12n-11e, Senora 841-54 ft, shot 50 qts, pump 50 bbls, 863 ft.

Okmulgee County: Bald Hill — Miesner's Town 11, nw c sw nw 27-15n-14e, Booch 1175-1300 ft, show gas in Booch, abnd 1410 ft.

Osage County: Osage City—Peters Co. 5, nw nw se 10-21n-8e, abnd 2995 ft.

Pottawatomie County: N. St. Louis—Viersen et al's Weld 1, sw sw 22-8n-4e, Hunton Chert 3928 ft, 3000 gals acid, flow 499 bbls, 3963 ft.

Seminole County: Seminole City — Wood's Lincoln 1-A, se se nw 34-9n-6e, Wilcox 4067 ft, shot 60 qts, pump 132 bbls, 4114 ft.

Burns Oil's Harber 1, ne sw nw 30-9n-7e, Wilcox 4221 ft, abnd 4223 ft.

OKLAHOMA OLD WELLS DEEPENED

Creek County: Cushing — Big Four Pet.'s McIntosh 6, ne nw ne 26-18n-7e, otd 890 ft, Cleveland 2045-70 ft, set 2-in tbg perforated at 2078 ft, packer at 2005 ft, td 2078 ft.

Kiowa County: Hobart—H. J. Sherman's Watkins 2, nw sw nw 20-7n-17w, otd 1127 ft, Green Shale 1127-46 ft, abnd 1342 ft.

Okfuskee County: Olmpic—Sinclair Prairie's Fisher 4, nw sw sw 19-10n-9e, otd 1837 ft, Senora sand 1837-57 ft, shot 40 qts, pump 40 bbls, 1860 ft.

Oklahoma County: Oklahoma City—British American's Francis 2, ne sw se sw 22-12n-3w, otd 6500 ft, Wilcox 6440 ft, pump 324 bbls, td 6548 ft.

OKLAHOMA WILDCAT COMPLETIONS

Hughes County: Failure — Phillips Pet.'s Ross 1, c ne se 18-5n-10e, Hart. 2980 ft, Wapa. 4040 ft, top Crom. 4465 ft, cored 4468-73 ft, shly lmy sandstone, cored 4473-80 ft, shale and lmy sand, stain and odor, cored 4478-85 ft, granite sand with stain, granite sand very hard, cored 4485-93 ft, grained shly brn sand with stain and odor, abnd 4622 ft.

Lincoln County: Failure — Dunnette Oil's Wiley 1, sw sw ne 24-13n-2e, Paw. 1740 ft, Hogs. 3730 ft, Ccb. 3930 ft, Osw. 4570 ft, Skinner 4793 ft, cored 4799-4805 ft, 4½ ft dry sand 6-in shale and sand, Miss. 5140, Wood. 5250 ft, Hunton 5333 ft, Syl. 5368 ft, Viola 5470 ft, Dense 5503 ft, Dolo. 5313 ft, 1st Wx. 5564 ft, abnd 5642 ft.

Marshall County: Failure—Samedan Oil's Godfrey 1, ne ne sw 13-6s-6e, Springer 730 ft, Wood. 1385 ft, Syl. 1655 ft, Viola 1950 ft, stain and odor in Viola 1999-2068 ft, dst with packer at 1999 ft, rec 60 ft, mud no show oil or gas in 1 hr, Bromide 2575 ft, Simp. 2640 ft, top Tulip Creek 3100 ft, top Basal McLish sand 3628 ft, drld to 3690 ft, abnd 3690 ft.

Pottawatomie County: Failure — Piggott's Cofer 1, ne ne nw 18-9n-3e, Paw. 1940 ft, Belle City 3175 ft, Hogs. 3595 ft, Osw. 4630 ft, Calc. 4710 ft, Earlsboro 4815 ft, Lower Earlsboro 4977-86 ft, Uncon sd 5009 ft, Uncon limestone 5055 ft, Mayes 5115 ft, Wood. 5160 ft, Mise. 5260 ft, Hunton 5262 ft, cored 4984-94 ft, Syl. 5430 ft, Viola 5530 ft, Dense 5585 ft, Dolo. 5630 ft, 1st Wx. 5708 ft, sandy dolo 5785 ft, 2nd Wx. 5803 ft, abnd 5827 ft.

Seminole County: Failures—Joe Scroggins et al's Patterson 1, nw nw nw 30-6n-7e, Calvin 1546 ft, abnd 1672 ft.

Stanolind's Johnson 1, nw nw se 28-9n-8e, Calc. 2020 ft, Henrietta Coal 2240 ft, Senora lime 2285 ft, brn lime 3000 ft, Booch 3130 ft, Gilc. zone 3210-84 ft, Crom. 3446-3553 ft, Mayes 3980 ft, Wood. 4090 ft, Mise. 4145 ft, Hunton 4165 ft, Cyl. 4201 ft, Viola 4290 ft, Dense 4340 ft, Dolo. 4345 ft, 1st Wx. 4375 ft, abnd 4393 ft.

Seminole County: New Field—Shell's Norvell 1, ne se sw 25-11n-7e, sw of Rusk production, Booch 3641 ft, Gilc. 3591 ft, Crom. zone 3652 ft, sand 3657 ft, Caney 3718 ft, Mayes 4057 ft, Wood. 4168 ft, Hunton 4195 ft, Sylvan 4227 ft, Viola 4364 ft, Dense 4404 ft, 1st Wx. 4432 ft, 2nd Wx. 4455 ft, 68 bbls oil 68 bbls water, 4485 ft.

OKLAHOMA WILDCAT STARTS

Creek County—Great Plains Oil & Gas' Abrams 1, c ne se 30-14n-9e, rig up.

Jackson County—Burnham Oil's Hall 1, nw nw 20-1n-20w, lcn.

Noble County—Midco's Hudson 1, se sw se 22-23n-1e, lcn.

Kansas

Viola Lime Producer Near Sterling, Rice County

New Viola pool for Rice County; Sun City offset is producer; Hendrickson extended southeast; Smyers is widened.

Barber County: Shutts 1, Great Lakes Carbon Corp.'s offset to the discovery of Sun City pool filled and flowed by heads from Lansing-Kansas City lime with pay section from 4289-4297 ft. Spot is NWc NE 35-30-15w.

Rice County: Mid-Continent Pet. Corp.'s Smisor 1, SW SE SW 30-22-9w, near Sterling and north of Smisor pool production some two miles, filled 3200 ft with crude in 8 hours natural, from Viola lime topped at 3676 and drilled to 3706 with oil string of 7-in at 3691 ft. This new field is a continuation of the Peace Creek-Smisor trend.

Reno County: Transwestern Oil Co.'s Withroder 1, CSE NW 1-23-10w, 40-acre offset SE of Hendrickson pool production, proved for maximum (3000 bbls) production to make favorable a considerable acreage in this direction. Production is from Viola lime, found in the Withroder from 3741 to 3725 ft.

Rice County: Smyers pool is reflecting continued activity with a west location to production, one to the north showing oil in Chat and a south test drilling below 2500 ft.

KANSAS FIELD COMPLETIONS

Barton County: Kraft-Prusa—Vickers Pet.'s Soeken "B" 1, c nw sw 22-17s-11w, Arbuckle 3276 ft, 3000 bbls, 3285 ft.

Butler County: Eldorado—Cities Service's Wilson 214, ne se sw 8-25s-5e, K. C. 1958 ft, 2000 gals acid, pump 45 bbls oil and 70 bbls water, 2024 ft.

Cowley County: Dunbar—Frank Phelps et al's Asmussen 2, ne ne nw 29-30s-5e, Miss. 2935 ft, abnd 2950 ft.

Greenwood County: Beaumont—K. T. Weidemann's Lewis A-15, c nw nw 36-27s-8e, Miss. 2428 ft, 2000 gals acid, pump 35 bbls, 2447 ft.

Kearny County: Larkin—Fin-Ker's Tate 1, nw nw nw ne 22-25s-35w, Ft. Riley Prod, ran

238 of 5½-in perf liner on bottom, 21,750 gals acid, 7,210 gas, 2680 ft.

McPherson County: Lindsborg—M. & L. Oil's Helberg 1, c w½ nw ne 18-17s-3w, top Viola 3351 ft, 3000 gals acid, pump 608 bbls, 3367 ft.

Phillips County: Ray—Cities Service's Johnson B-7, ne se sw 32-5s-20w, Reagan 3566 ft, 903 bbls oil and 63 bbls water, 3577 ft.

Cities Service's Nichols 3, ne sw sw 33-5s-20w, Reagan 3575 ft, 1341 bbls, 3583 ft.

Reno County: Schweizer—Cities Service's Ball 1, sw sw ne 31-22s-9w, top Viola 3701 ft, 2000 gals acid, pump 144 bbls oil and 316 bbls water, pb 3714 ft, td 3730 ft.

Cities Service's Hoffman C-1, c ne sw 31-22s-9w, Viola 3696 ft, pay 3709-19 ft, 1000 gals acid, pump 134 bbls oil and 194 bbls water, 3720 ft.

Cities Service's Hoffman C-2, sw nw sw 31-22s-9w, Viola 3688 ft, 5000 gals acid, pump 171 bbls oil and 51 bbls water, 3730 ft.

Reno County: Hendrickson—Cities Service's Hinshaw A-2, c ne sw 2-23s-10w, Viola 3707 ft, pay 3724-32 ft, 5000 gals acid, 2540 bbls, 3739 ft.

Reno County: Peace Creek—Cities Service's Krerie E-1, sw ne nw 28-23s-10w, Viola 3781 ft, 500 gals acid, pump 132 bbls oil and 73 bbls water, 3791 ft.

Rice County: Smyres—R. S. Slade & R. G. Berry's Matson 1, sw se 25-19s-6w, Miss. 3348 ft, pump 260 bbls, 3381 ft.

Continental's Johns 2, ne ne nw 36-19s-6w, Miss. Chat 3321 ft, shot 30 qts, pump 204 bbls pb 3363 ft, td 3376 ft.

Rice County: Campbell—Auto Ordnance Corp.'s Hall 1, c n¼ sw sw 34-19s-9w, Arbuckle 3209½ ft, 4000 gals acid, swab, 1190 bbls, 3222 ft.

Rice County: Silica—Colorado Pet.'s Roth 1, c n½ nw se 30-19s-10w, Lansing 3013 ft, perf csg 5000 gals acid, abnd 3330 ft.

Rice County: Wherry—Mid-Plains' Willis 1, c s½ se nw 11-21s-7w, Miss. 3400 ft, abnd 3411 ft.

Rooks County: Laton—Broadview's Baxter B-1, c s½ nw nw 2-9s-16w, 8000 gals acid, pay 3155-58 ft, pay 3189-91 ft, pump 75 bbls, 3207 ft.

Russell County: Davidson—Stanolind's Borrell 1, c n½ ne ne 33-15s-11w, Arbuckle 3240 ft, 500 gals acid, pb 3010 ft, abnd 3245 ft.

Stafford County: Zenith—Phillips Pet.'s Tretbar 7, c e½ nw ne 12-24s-11w, Misener 3690 ft, perf csg, 500 gals acid, 3000 bbls fluid, pb 3708 ft, td 3735 ft.

Stevens County: Hugoton—Republic's Kuhn 1, ne ne ne sw 15-23s-37w, Harrington 2550 ft, 8000 gals acid, test 7.5 gas, 2773 ft.

Republic Nat's Mitchell 1, c sw 18-35s-37e, Herrington prod, 15.0 gas, 2894 ft.

KANSAS OLD WELLS DEEPENED

Rice County: Silica—Bradley & Republic's Wendell 3, sw se ne 32-19s-10w, otd 3313 ft, top Pre-Cambrian 3758 ft, salt water disposal well, 3807 ft.

Russell County: Fairport—N Appleman's Oswald 14, se nw nw 17-12s-15w, otd 2987½ ft, Gorham 3286 ft, pump 400 bbls oil, td 3292 ft.

KANSAS WILDCAT COMPLETIONS

Cowley County: Failure—Oil Interests, Inc.'s Notestine 1, nw nw nw 18-32s-3e, Bartles. zone 3117 ft, Miss. 3164 ft, Simpson 3499 ft, Arb. 3513-31 ft, abnd 3531 ft.

Reno County: New Field—Simpson Oil's Souder 1, sw ne ne 32-23s-10w, Anhy. 450 ft, Ft. Riley 1710 ft, Flor. 1810 ft, Wreford 1890 ft, Topeka 2820 ft, Lansing 3295 ft, Congl. 3621 ft, Miss. 3630 ft, Kinderhook 3650 ft, Viola 3671 ft, 1500 gals acid tested gas 3670 ft, pb 3023 ft, Viola 3671-3730 ft, cem 5-in 3715 ft, 2500 gals acid, 1106 bbls, 3740 ft.

Rooks County: Failure—Falcon Seaboard Oil et al's Hrabe 1, c se nw 25-8s-17w, Anhy. 1260 ft, Ft. Riley 1960 ft, Neva 2300 ft, Heebner 3099 ft, Dodge 3120-24 ft, Lansing 3140 ft, trace oil 3176-90 ft, stain 3244-45 ft, Congl. 3460 ft, Arb. 3500 ft, abnd 3522 ft.

KANSAS WILDCAT STARTS

Ellsworth County—Falcon Seaboard Oil et al's Bruning 1, ne ne se 9-15s-9w, lcn.

Harvey County—Atlantic Oil & Investment Co.'s Williams 1, se se se 30-24s-2w, lcn.

Phillips County—Carter Oil Co.'s Shaw 1, c nw nw 23-3s-18w, lcn.

Pottawatomie County—C. O. LaShelle's Umschied 1, c nw nw 16-9s-9e, shut down.

Reno County—Stanolind et al's Gillmore 1, nw sw nw 9-23s-14w, dr.

Rice County—R. S. Shade's Berry 2, apx nw se 25-19s-6w, lcn.

Stafford County—W. P. Faulkner et al's Ward 1, c se sw 21-21s-13w, cellar.

Trego County—Darby Pet.'s Findlay 1, se nw nw 23-11s-21w, rig.

Oklahoma Lease Sale

A few acres less than 2000 will be offered at the Pawnee Indian agency sale, Pawnee, June 25, when sealed bids will be received by L. M. Towers, superintendent. All tracts are in township 21 north, range 5 east, Pawnee County.

Nebraska

Another Dawson Well Has Viola Lime Showing

Another Viola well shows; granite stops test in Gage County.

Richardson County: Skelly Oil's Smith Smith 1, CE½ SE SE 3-1n-14e, Dawson field, drilled Viola lime 2885-2887 ft and found saturation. Casing is being run for a test. The first Viola lime well in the state, and the only formation other than Hunton lime in the eastern part of Nebraska to be productive, resulted from tests in this pool.

Gage County: D. Linn's Scheideler 1, SW cor 14-1n-6e, Gage County wildcat location just north of the Kansas state line, is dry at 2800 feet where tools encountered granite.

Missouri: A new test for the Missouri section of the Forest City Basin is Skelly Oil Company's Mutual Benefit Life 1, E½ SE SE 30-60n-7e, Holt County. It is located across the river from southeastern Nebraska, where Falls City field opened first production in the Basin. Location of the wildcat places it near center of Basin, formation markers therefore will be encountered at depths exceeding those found in the Nebraska section.

New Mexico

NEW MEXICO FIELD COMPLETIONS

Eddy County—Barney Cockburn et al's (was L. H. Choate-C. W. Brown's) State-Jackson 1, c ne sw 36-16s-30e, flow 408 bbls 2-in natural, 3028-38 ft, td 3062 ft.

Earl Polyhar et al's State-Spurck 5, sw ne se 24-17s-27e, abnd 525 ft.

Sanders Bros. et al's Leonard 6, c sw nw 34-16s-30e, flow 148 bbls 2-in natural 2934-42 ft, td 2970 ft.

NEW MEXICO WILDCAT COMPLETION

Lea County: Failure—Culbertson-Irwin & Southern Cal. Pet. Corp.'s Shepherd 1, c lot 16, 1-21s-32e, elev 3762 ft, anhydrite 1535 ft, salt 1655 ft, abnd 3496 ft.

NEW MEXICO WILDCAT STARTS

Eddy County—E. Orcutt et al's F. E. Kepple 1, ne sw se 19-17s-27e, lcn.

Lea County—Gordon M. Cone et al's State-Superior 1, c ne sw 30-18s-37e, lcn.

Texas Drilling Permits Total 74 for Week

Permits for drilling 74 wells in Texas were approved last week by the Texas Railroad Commission, an increase of 68 over the week before.

A total of 13 permits were authorized in Southwest Texas, six in the Gulf Coast, nine in West Central Texas and 20 in West Texas. One location received Commission approval in Smith County in the East Texas field, while four were reported from the remainder of the East Central Texas area.

North Texas operators were allowed to drill 16 wells, and Panhandle producers were authorized to drill five.

West Central Texas

WEST CENTRAL TEXAS FIELD COMPLETIONS

Coleman County—Anderson-Prichard Oil Corp.'s Harris 2, c ne ne GH&H 51, blk 2, flow 25 bbls 2-in, shot 40 qts Morris sand 3057-75 ft.

Palo Pinto County—Albert Adkisson et al's Allen-Ritchie 6, 900 ft from se and 2000 ft from sw lines L. J. Pitts sur A-1289, flow 15 bbls 2-in natural, sand 1516-28 ft.

Shackelford County—Roeser-Pendleton-Continental's Cook 13-A-117, E. T. Ry. sec 117, pump 20 bbls 1698-1705 ft.

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WEST CENTRAL TEXAS WILDCAT COMPLETIONS

Hamilton County: Failure—Grady Wallace et al's Robertson 1, 1096 ft from s and 1985 ft from m/w/w lines 520-ac tr, John Chew sur A-164, elev 1335 ft, Marble Falls 3275 ft, abnd 3501 ft.

Jones County: Failure—Fain-McGaha Oil Corp.'s Sears-Brown 1, 660 ft out nec blk 25, leag 150, DeWitt CSL sur, elev 1878 ft, abnd 3100 ft.

WEST CENTRAL TEXAS WILDCAT STARTS

Coleman County—Anzac Oil Corp. et al's L. V. Eddington 1, 3967 ft from w and 500 ft from n lines Victoria CSL sur No. 187, lcn 2700-ft test.

Woodley Pet. Co.'s I. M. Thompson 1, c ne ne HT&B 2, blk 1, 4 mi se Silver Valley oil prod, lcn 3500-ft test.

Jones County—M. J. Delaney et al's L. Hastinges 1, nw nw ne BBB&C sec 191, lcn.

Taylor County—Fair-McGaha Oil Corp.'s A. D. Fulton 1, 780 ft from n and 560 ft from w of tr in sec corner T&P 3, blk 18, lcn.

West Texas

North Basin Outpost Finding Formations Low

Lamb County Ordovician prospect establishes steep dip in formations on north flank of granite ridge. Seven of the 19 operations on short-term University leases in Andrews County are trying to complete in regular Permian. Nitro shot failed to boost production in State's first Cambrian producer.

North Basin: Stanolind's Hopping 1, east central Lamb County wildcat and 10 to 15 miles north of the apex of the granite ridge that extends west-east across Permian Basin, drilling dry lime 9250 ft in Mississippian, topped 9040 ft, elevation 3561 ft. On this marker it is 2125 ft low to Stanolind et al's Byrd 1, SE corner Hale County, abandoned in granite 6745-60 ft, elevation 3251 ft. Course of the deep buried ridge, which may afford production trap in Pennsylvanian to Ordovician series, has been tentatively outlined by failures in Roosevelt County, New Mexico, Cochran, Hale, Crosby and Garza counties.

Pecos County: Gulf and Wentz's Millar 3, northwest offset their Ellenburger oil discovery, swabbed 77 bbls 34-gr oil in 24 hours while awaiting pumping unit, after 45-quart nitro shot in 14-ft Cambrian pay section, topped 4376 ft, with schist at 4392-4406 ft. Millar 3 failed to indicate production in Ellenburger, topped 4167 ft, level with discovery on subsea depth.

Wildcat Failures: Bruce McKague et al's Goodpasture 1, Hockley County, measured up without drill stem test 5202 ft. In Reeves County, C. A. Kitsos, Geo. Scott et al's Burchard 1, 14 miles northwest Toyah, proved dry in Delaware 3504-57 ft, elevation 3225 ft, Cardinal Oil Co.'s Lowrey-Wilson 1-A, 3 miles east White-Baker pool, logged dry lime 1717-35 ft.

Andrews County: Humble's Sims 1, wildcat in northwest corner county, drilling dry lime 7490 ft in Clear Fork, topped 6130 ft, and slated to drill beyond Permian. Atlantic et al's University-Texu 1-A, southwest sector county, drilling lower Clear Fork 6360 ft on Ordovician contract. Seven of the 19 operations on University blocks 10 and 11 are attempting to complete in regular Permian, but none show promise of flowing production.

Reagan County: Argo Oil Corp.'s Nunn 1, wildcat, logged sulphur water 3435-39 ft in lime, topped 3260 ft, elevation 2676 ft, drilling 3460 ft.

In Barnhart pool, Ogden-Hawn and Reed's University 2-A flowed 281 bbls 4 hrs ½-in official gauge, acid 10,000 gals Ellenburger 9086-9172 ft. Amerada's University 1-R-F, southwest offset, drilling plugs from 5½-in 8990 ft, based black shale 8956 ft, elevation 2725 ft, being 15 ft high to above well.

WEST TEXAS FIELD COMPLETIONS

Cochran County: Slaughter—Devonian Oil Co. et al's Duggan 20-A, swc lab 3, leag 55, Oldham CSL, flow 1667 bbls cas, acid 12,500 gals 4961-5016 ft.

Crane County: Gulf Waddell—Gulf's Henderson 31, ne se sw PSL 3, blk B-23, flow 2960 bbls, acid 5000 gals 3510-15 ft.

Crane County: Sand Hills—Magnolia's Lea 14, c se sw PSL 4, blk B-32, flow 925 bbls 1-in, 4421-4553 ft.

Hockley County: Slaughter—Honolulu's Mallet 16-A, sec lab 10, leag 52, Scurry CSL, flow 384 bbls 2½-in, acid 5000 gals 4980-5025 ft.

Honolulu's Mallet 22-A, swc lab 3, leag 52, Scurry CSL, flow 964 bbls 2½-in, acid 10,000 gals 4960-5028 ft.

Honolulu's Slaughter 36-B, swc lab 52, leag 37, Zavalla CSL, flow 985 bbls 2½-in, acid 10,000 gals 4910-95 ft.

Humble's Coons 4, 2470 ft from n and 530 ft from w PSL 11, blk X, flow 1398 bbls 2½-in, acid 10,000 gals perforations 306 shots 4910-5012 ft, td 5022 ft.

Magnolia's Mallet 16-D, swc lab 9, leag 49, Edwards CSL, flow 1371 bbls casing, acid 10,500 gals 4925-5010 ft.

Western States Gasoline Corp.'s Coons-Humble 4, 440 ft from e and 1430 ft from n lines PSL 11, blk X, flow 1568 bbls 7-in, acid 11,000 gals 4940-5041 ft.

Westerns States' Mallet 13, swc lab 10, leag 51, Scurry CSL, flow 837 bbls plus 2.2% bs&w, casing, acid 8500 gals 5000-28 ft.

Howard County—Mid-Continent Pet. Corp.'s Denman 4-B, ne sw se T&P 16, blk 30, T-1-S, pump 251 bbls, shot 440 qts 2750-2855 ft.

Pecos County: Apco—Skelly Oil Co.'s Crockett 2, 4873 ft n and 3349 ft w of sec T. C. Rt. 5, blk 110, flow 1201 bbls ½-in natural, Ellenburger perforations 4620-4705 ft, td 4769 ft.

Pecos County: Conry-Davis—Siemoneit Drlg. Co.'s Burnhart 1, 330 ft from nw and ne lines lot 14, H&TC 16, blk 2, flow 299 bbls natural ½-in, 2271-80 ft.

Stanolind-Tal-Vez Oil Co.'s Hall 1, 660 ft from m/s/n and m/e/e lines H&TC 18, blk 2, flow 221 bbls ½-in, acid 1500 gals 2292-2317 ft.

Pecos County: Taylor-Link—Dave Breeding et al's University 2-11, c sw se sec 11, blk 18, pump 317 bbls, plus 20 percent bs&w, acid 2000 gals 1608-15 ft.

Terry County: Slaughter—Honolulu's DeVitt 3, 495 ft from n and 2145 ft from w lines C&M 4, blk D-11, flow 2106 bbls 2½-in, acid 10,000 gals 4995-5035 ft.

Ward County—Stanolind's Coons 1, c s¼ of w¼ H&TC 35, blk 34, elev 2606 ft, sul w 2939 ft, abnd 3200 ft.

Winkler County: Keystone—Sid Richardson & Perry Bass' Bashara 4, 330 ft from n and 2200 ft from e PSL 21, blk 77, flow 563 bbls 38/64-in, shot 440 qts 3255-3395 ft, td 3410 ft.

Richardson & Bass' Walton 9, 2119 ft from n and 1660 ft from w PSL 5, blk B-2, flow 306 bbls ½-in, shot 430 qts 3217-3353 ft, td 3372 ft.

Yoakum County: Wasson—Drilling & Exploration Co.'s Knight-Shell 1-A, c se nw sec 773, flow 408 bbls 11/16-in, acid 9000 gals 4970-5235 ft.

Trinity Drilling Co.'s Shanks-Sun 3, 2200 ft from w and 440 ft from s sec 700, flow 409 bbls ¾-in, acid 12,000 gals 5205-80 ft.

WEST TEXAS OLD WELLS DEEPENED

Pecos County: Conry-Davis—Stanolind's Smith 1, 1945 ft from s and 645 ft from e H&GN 31, blk 9, otd 3900 ft, flow 118 bbls plus 3% water, ½-in, acid 3500 gals perforations 3757-70 ft, td 3952 ft.

Ward County—W. A. Black & Sons' Gordon 1, H&TC 6, blk 34, otd 2485 ft, pump 5 bbls, td 2714 ft, pb to 2512 ft.

Magnolia's Sealy 8-46, ne nw ne sec 46, blk F, otd 2850 ft, pump 32 bbls plus 50% bs&w, td 2895 ft.

WEST TEXAS WILDCAT COMPLETIONS

Pecos County: Failure—Cardinal Oil Co.'s Lowery-Wilson 1-A, 2350 ft from s and 990 ft from e lines T. C. Ry. 20, blk Z, elev 2709 ft, lime 1717 ft, abnd 1735 ft.

Sterling County: Failure—Steve Currie-E. M. Wahlenmaier's Harris-Sun 1, c nw nw H&TC 129, blk 6, elev 2276 ft, lime 1047 ft, abnd 1407 ft.

WEST TEXAS WILDCAT STARTS

Crane County—The Texas Co.'s T. P. Land Trust 1, c nw ne T&P 19, blk 42, T-4-S, sp on 5000-ft test.

Menard County—Phillips Pet. Co.'s J. M. Treadwell 1, c se sw TWNG 3, blk 2, Ellenburger, or 5000-ft lcn.

East Texas

Hunt and Navarro Counties Have Prospective Strikes

Woodbine faulted structures in Hunt and Navarro counties have prospective discoveries. Six tests slated for new Wood County pool, which yields high percentage of lubes with sulphur content. Chapel Hill records first oil producer in Rodessa limestone.

Hunt County: Hollandsworth Drilling Co.'s Baker 1, John Warren Survey, 7 miles southeast Greenville, due to run pipe after logging oil saturation in Woodbine 2758-78 ft, elevation 503 ft. Austin Chalk found at 1778-2265 ft. Average 200 ft high to Cable Tool Drilling Co.'s Williams 1, mile west by north and failure in Paluxy 4632 ft.

Navarro County: John Hooser et al's Black 1, Bazette area, perforating pipe, landed on bottom 3325 ft, after electric log indicated possible production 3231-54 ft in Woodbine, topped 3153 ft, elevation 378 ft.

Wood County: Authorized tests for Black Oak pool, opened June 8 when Amerada's Kennemer 1 flowed 320 bbls 27.5-gr pipe line oil natural on 4-hour potential, Paluxy perforations 6262-6350 ft, increased to 6, including 4 offsets contracted by Amerada.

Jerry Hawkins et al's Clark 1, northeast outpost, has spudded, and General American Oil Co.'s Rodney 1, northwest outpost, due to start shortly. The allowable production of the discovery will supply fuel for these operations.

The assumption that the low-gravity black oil produced by the Black Oak prospect would yield asphalt similar to Paluxy production at Talco and Sulphur Bluff proved erroneous, as crude analysis reveals it to be predominately lube stock material, with 2.17 percent sulphur content. Summary of distillation shows 15 percent each of gasoline, gas oil and residue; 40 percent light, medium and heavy lubes; 5 percent naphtha; and 10 percent kerosene. The gasoline has octane rating of 43. The sulphur content is below the average of the other Paluxy oil areas.

Chapel Hill: Sun Oil Co.'s Friedlander 2, east edge well, became the first oil producer in the Lower Glen Rose, or Rodessa, limestone in flowing natural 102 bbls oil, plus 1.57 bbls water initial, 9/32-in tubing choke, gas/oil ratio 613/1, perforations 7741-50 ft, having plugged back from small oil producer in Pettit. Field' discovery completed in Rodessa as prolific gas-distillate well.

EAST TEXAS FIELD COMPLETIONS

East Texas Field: Joiner Area—Roosth & Genecov's Neal Cooper 1-A, 710 ft from n and 375 ft from e lines T. J. Moore sur, pump 18 bbls, Woodbine 3567-88 ft.

Smith County: Chapel Hill—Shell's Kinsey 2, 660 ft from n and 540 ft from e lines J. D. Parchman sur, flow 426 bbls 43.3-gr, ¼-in, acid 4000 gals, Pettit perforations 8126-56, 8230-46, 8282-92 ft, td 8330 ft.

Wood County: Hawkins—Humble's Dagnell 1-B, 498 ft from s and 402 ft from e and w lines 18.33-ac tr, M. A. Esparcia sur, flow 323 bbls ¼-in, Woodbine perforations 4844-58 ft, td 4910 ft.

Humble's Ellison 1, 467 ft n and 667 ft e of swc H. M. N. McKnight sur, pump 81 bbls, plus 24% bs&w, perforations 4785-4803 ft, td 4969 ft.

Tom L. Sessions et al's Farmer 1, 467 ft from w and 1275 ft from n lines Chas. Duncombe sur, elev 438 ft, top Woodbine 4825 ft, abnd 4898 ft.

EAST TEXAS WILDCAT COMPLETIONS

Angelina County: Failure—Coastal Refineries, Inc. et al's Henderson 1, 2600 ft s and

900 ft e of swc David McCoy sur, on 3200-ac tr, John Watson sur, elev 181 ft, top Queen City 891 ft, Wilcox 1150 ft, Midway 3270 ft, abnd 4532 ft.

Henderson County: Failure — The Texas Co.'s Brown 1, 1980 ft from s and 3225 ft from w lines 826-ac tr, Armistead Eans sur, elev 435 ft, Pecan 2850-3270 ft, Austin 4000-4258 ft, Sub-Clarksville 4310-36 ft, Woodbine 4538 ft, Georgetown 5533 ft, Paluxy 7145-75 ft, 1st Glen Rose 7590 ft, 1st anhydrite 8804 ft, 2nd anhydrite 9566 ft, abnd 9965 ft.

Wood County: New Field—Amerada's Kennemer 1, 660 ft out m/n/nwc Jos. Knight sur, 8 mi w Winnsboro, elev 453 ft, Pecan 2492 ft, Austin 3899-4022 ft, Sub-Clarksville 40-43-58 ft, Woodbine 4454 ft, Georgetown 5100-6222 ft, top Paluxy 6254 ft, flow 1920 bbls initial, based on 320 bbls 27.5-gr asphalt-oil 4 hrs, 2-in tubing natural, gas/oil ratio 107/1, Paluxy pay perforations 266 shots 6262-6350 ft, td 6384 ft.

EAST TEXAS WILDCAT START

Van Zandt County—Chas. Alexander Jr. et al's L. Sides 1, 660 ft out east corner 310-ac tr, Q. D. Nugent sur, lcn.

Texas Panhandle

Open Sherman County Third Gas Field

L. R. Hagy-Harrington & Marsh's Bivins-Coldwater 1, SE SE NW GH&H Sec 21, Blk 3-B, opened gas producing area in southeastern Sherman County, making third gas pool for county, rated 1,000,000 ft dry gas daily, Permian dolomite 3105-3200 ft, elevation 3422 ft. Discovery is mile southeast of Gibson Oil Corp.-Get Oil Co.'s Bivins 1, which passed up indicated commercial gas flow 2980-3003 ft, elevation 3419 ft, and abandoned 3660 ft.

TEXAS PANHANDLE FIELD COMPLETIONS

Carson County — Cities Service Oil Co.'s Burnett 47-A, I&GN 13, blk 4, 20,600,000 gas, 335 lbs rock pressure, 2635-2730 ft, td 2765 ft.

Gray County—Danciger O&R, Inc.'s Powell-Beck 25, H&GN 28, blk B-2, pump 345 bbls, granite-wash 2853-64 ft, td 2943 ft.

Hutchinson County — J. M. Huber Corp.'s David-Hanson 1, c sw AB&M sec 1, blk M-16, 11,400,000 gas, 402 lbs rock pressure, 3025-3164 ft, td 3280 ft.

North Texas

Young County Has Good Mississippi Lime Wildcat

Young County discovery flows natural from Mississippian. This zone accounts for prolific well in Antelope pool. Three offsets given recent 7200-ft oil strike in Montague County, and two new deep prospects for county. Strawn wildcat in Northern Archer Conuty showing for oil producer.

Young County: Shell's Bullock 1, NEc TE&L Sec 343, 7¾ miles northwest New Castle and 6 miles southwest Burns-Larimore pool, nearest deep area, flowed 411 bbls pipe line oil natural in 8 hrs through 2-in tubing open, Mississippian broken saturation at 4748-4820 ft, 4½-in casing set 4741 ft. This discovery lies west of shallow production, and to stimulate deep prospecting in west portion county.

Clay County: Shell's Henderson 22-C, northeast offset its Mississippian discovery for Antelope pool, became second producer for this horizon in flowing 350 bbls of pipe line oil in 1-hr test through open 2-in tubing and 2-in outlet on 4½-in casing, with gas rated 5,000,000 ft daily. Acidized 2000 gallons through perforations 5750-95 ft in Mississippian, topped 5698 ft, 51 ft low to discovery. Ellenburger section 6068-86 ft dry, and perforations 5900-90 ft tested oil and water after acid, then squeezed. Discovery this zone made big potential, but east offset and west offset plugged back for small well in Basal Bend 5451-80 ft.

Archer County: Geo. W. Cooper et al's Knight 1, NEc W½ Blk 69, KWVFL Survey, 4¼ miles southeast and 3½ miles northeast of K-M-A and Hull-Silk deep areas, respectively, filled 100 ft with oil per hour rate, small amount water showing, and on 12-hr bailing test from Strawn broken saturation 4110-45 ft failed to lower fluid level. This wildcat due to make commercial producer when acidized.

Montague County: Sinclair Prairie starting 3 offsets to its Jones 1, recent discovery 1¼ miles northeast Forestburg that flowed 888 bbls 42-gr oil in 9 hrs through open tubing, acidized Marble Falls 7176-7323 ft, all on the Jones 314.3-acre tract, Singletary and Box surveys. Company also starting 2 wildcats, involving Henderson 2, twin to 6935-ft junked well 2 miles east by north Denver, and Eanes 1, 6¾ miles southwest Bowie, while location assigned its 6000-ac block, Grayson County, for Ordovician test on Freeman tract, BBB&C Sec 149.

Jack County: Hanlon & Buchanan's Griffin 1, 1½ miles southeast Hoefle pool, preparing to test broken oil saturation 4851-66 ft, 7-in casing set 4851 ft in Bend, topped 4845 ft. Joe A. Worsham et al's Hensley 1, recent wildcat strike that flowed oil and gas from Marble Falls 5295-97 ft, resulting in tools being stuck, failed to recover junk, and will attempt to drill by.

NORTH TEXAS FIELD COMPLETIONS

Archer County—Van Wormer & Phillips Pet. Co.'s Falls 1, 400 ft from n and 350 ft from w of e 47-ac tr, blk 63, Falls CSL, pump 5 bbls, sand 1161-75 ft.

Clay County — Akin-Dimock-Costley's Patrick 2-C, 330 ft out nwc s 40 of w 70 ac blk 82, Byers subdiv, abnd 1323 ft.

W. H. Spradling et al's Taylor-Elliott 1, 2000 ft from s and 636 ft from w lines blk 56, Bacon subdiv, pump 100 bbls 1127-37 ft.

Throckmorton County—Geo. Keith et al's Wilhelm 1, 458 ft se and 450 ft ne of n corner S. P. Ry. sec 652, but in S. P. Ry. sec 1, abnd 782 ft.

Wichita County: K-M-A Ellenburger—Shell & Phillips Pet. Co.'s Griffin 44, 5067 ft from e and 3208 ft from n lines 860-ac lse, F. Jordan sur, flow 2712 bbls 2-in, acid 500 gals 4348-60 ft.

Sunray Oil Co.'s Mangold 17-E, 600 ft from s and 450 ft from w lines n½ blk 37, P. Castleman sur, flow 2544 bbls 1-in, acid 3000 gals 4330-62 ft.

Young County—Mid-Continent Pet. Corp.'s Owen 1, J. E. Dowdle sur A-2215, Bend 3580 ft, Marble Falls 3900 ft, Barnett shale 4375 ft, Ellenburger 4650 ft, flow 610 bbls ½-in, acid 6500 gals perforations 4012-23, 4447-71 and 4602-30 ft, td 4770 ft.

A. S. Strong et al's Stovall 2, TE&L sec 2946, top Smithwick 3880 ft, Ellenburger 4820 ft, pump 35 bbls oil and 250 bbls water, acid 7000 gals Marble Falls perforations 4616-32, 4680-95 and 4709-15 ft, td 5000 ft, pb to 4820 ft.

NORTH TEXAS OLD WELLS DEEPENED

Wichita County K-M-A—Tide Water Associated's Pettit 11, sw se sw HT&C 28, blk 7, otd 3750 ft, flow 288 bbls 20/64-in, shot Strawn 270 qts 3730-3802 ft.

Tide Water Associated's Pettit 16, ne se ne H&TC 28, blk 7, otd 3735 ft, flow 896 bbls ¾-in, shot 270 qts 3692-3772 ft.

Tide Water Associated's Pettit 27, H&TC 27, blk 7, otd 3881 ft, flow 312 bbls 20/64-in, shot 240 qts 3847-3915 ft.

NORTH TEXAS WILDCAT COMPLETIONS

Archer County: Failures—Phillips Pet. Co.'s Williams-Wildora 1, 330 ft out nec w 200 ac of s½ H&TC 8, blk 4, top Canyon 3114 ft, abnd 3186 ft.

Craig & Wilson's Ikard 1, 330 ft out sec W. L. Porter sur A-1074, abnd 1154 ft.

Cooke County: Failure—W. F. Russell et al's Gwynn 1, 660 ft from nw and sw lines of H. Jennings sur, top Ellenburger 1589 ft, abnd 1629 ft.

Montague County: Failure—Sinclair Prairie's Henderson 1, 467 ft se of s corner J. M. Hodges sur, but in W. E. Martin sur A-1111, top Bend 5695 ft, 2nd lime 6067 ft, Barnett shale 6530 ft, jkd 6935 ft.

NORTH TEXAS WILDCAT STARTS

Archer County—Cochran & Cain's C. A. Cockrell 1, 990 ft from s and 330 ft from w lines TE&L sur 2450, lcn.

Montague County—Sinclair Prairie's C. R. Henderson 2, 580 ft ne and 330 ft se at right angles to swc of J. M. Hodges sur, but in W. E. Martin sur A-1111, 176 ft from jkd well, rur.

Young County—B. C. Gilmore et al's Della Holly 1, 330 ft out swc 112-ac tr, L. W. Ross sur A-1352, lcn.

Panhandle Ref. Co. et al's W. Brundage 1, 2948 ft e and 660 ft s of nwc of S. Holderness sur, but in J. T. Townsend sur A-1645, lcn 4500-ft test.

Southwest Texas

Lee County Has First Deep Edwards Showing

Discovery of additional Wilcox production and a possible new Edwards limestone field in Lee County brought Southwest Texas new pool discoveries to 22 thus far this year.

Lee County: Holland Oil Co.'s Richter 1, southeast of Tanglewood, and on a farmout from Shell Oil Company, topped the Edwards lime about 6651 ft, cored in to 6689 ft, recovering small amount of lime all with oil shows. Series of drill stem tests recovered from 30 to 150 feet of oil and oily mud under light pressure. It is expected that casing will be set for completion. Would open the first deep Edwards lime field along this trend.

Jackson County: Gulf's Simons 2, 3810 ft s Texana fld, perforated 5715-20 ft, recovered gas, salt water and condensate, squeezed and reperforated 5705-10 ft, testing gas and condensate. Opening new sand.

Kleberg County: Humble's King-Cabeza 1, east outpost Seeligson field, coring below 5900 ft. Sands 5203-13 ft and 5229-63 ft recovered oil. Corresponds to Sun or No. 14 sd. Materially extends that pay to east.

SOUTH CENTRAL TEXAS FIELD COMPLETIONS

Caldwell County: Lytton Springs — D. B. Krieger's Brewer 2, F. Castillo sur, temp abnd 1588 ft.

LaSalle County: Washburn — Quintana's South Texas 12, sur 95, outpost, abnd 5728 ft.

SOUTH CENTRAL TEXAS WILDCAT COMPLETION

Bexar County: Failure—V. E. Nicholson's Bonkocsky 1, McNuner sur, 2½ mi ne Adkins, abnd 1393 ft.

SOUTH CENTRAL TEXAS WILDCAT START

Travis County—Marts & Beaven's Anderson 1, 1200 ft s and e lines 221-ac lse, M. Green sur, 3 mi se Elroy, 1350-ft test.

LOWER GULF COAST FIELD COMPLETIONS

Jackson County: Harmon Extension—Gulfboard's Harmon 2, sec 23, 104.14 bbls 28.9-gr oil, ⅛-in chk, 550 lbs tp, cas sealed, gas/oil ratio 289/1, perf 5381-89 ft, td 5394 ft.

Jackson County: Maurbro—Cities Service's Prichett 1, A. M. Clare lge, 249 bbls 25-gr, 3/16-in ch, 490 lbs tp, 600 lbs cp, gas/oil ratio 400/1, perf 5225-34 ft, td 5255 ft.

Jackson County: N. LaWard—Cities Service's Graves 2, blk 18, 140 bbls 26.4-gr, 3/16-in ch, 160 lbs tp, 460 lbs cp, gas/oil ratio 200/1, perf 5210-14 ft, td 5230 ft.

Magnolia's Four-Way 2-A, blk 30, 117.28 bbls 24.4-gr, 2% sw, 7/64-in ch, 420 lbs tp, 1180 lbs cp, gas/oil ratio 242/1, perf 5225-27 ft, td 5700 ft.

Jackson County: W. Ganado — Pure's

Eversberg 1, Menefee sur, 91.14 bbls 24.3-gr, 8/64-in ch, 440 lbs tp, 200 lbs cp, gas/oil ratio 200/1, perf 4755-75 ft, td 6391 ft.

Jim Wells County: Seeligson—Transwestern's Dunlap 12, sec 179, 143 bbls 41-gr, 3/32-in ch, 1175 lbs tp, 1300 lbs cp, gas/oil ratio 769/1, perf 6032-36 ft, td 6075 ft.

Live Oak County: Oakville — Simmon's Reagan 6-C, Romaro sur, 68 bbls 23-gr, 3/16-in ch, 120 lbs tp, 390 lbs cp, gas/oil ratio 381/1, perf 2729-34 ft, td 2737 ft.

Kleberg County: Stratton—Chicago Corp.'s Wardner 27, sec 19, 149.6 bbls 42.2-gr, ⅛-in ch, 1090 lbs tp, 2290 lbs cp, gas/oil ratio 578/1, perf in sd 6576 ft, td 6610 ft.

Nueces County: Agua Dulce—Lockhart Oil Co.'s Winfield 4, 40 bbls 57-gr condensate plus large vol gas, 3/16-in ch, 2650 lbs wp, perf 6612-17 ft, td 6930 ft.

Richardson Pet. Co.'s Union Central 1-B, sec 304, 155 bbls 41.5-gr, ⅛-in ch, 1000 lbs tp, 1375 lbs cp, gas/oil ratio 720/1, perf 7090-7106 ft, td 7117 ft.

Nueces County: Bentonville-King—Southern Minerals' King 28, sec 6, 97.5 bbls 38-gr, ⅛-in ch, 625 lbs tp, 1035 lbs cp, gas/oil ratio 1345/1, perf 5347-55 ft, td 5573 ft.

Nueces County: Stratton—Southern Minerals' Stratton Community 38, sec 199, 81 bbls 42.4-gr, 7/64-in ch, 800 lbs tp, 1200 lbs cp, gas/oil ratio 650/1, perf 6521-37 ft, td 6640 ft.

Southern Minerals' Stratton Community 39, sec 199, 80 bbls 42.1-gr, 7/64-in ch, 550 lbs tp, 950 lbs cp, gas/oil ratio 860/1, perf 6443-53 ft, td 6638 ft.

Southern Minerals' Stratton Community 41, sec 199, 64.96 bbls 42-gr, 3/32-in ch, 950 lbs tp, 1400 lbs cp, gas/oil ratio 875/1, perf 6487-6522 ft, td 6700 ft.

Southern Minerals' Stratton Community 42, section 199, 81.22 bbls 42.1-gr, 7/64-in ch, 925 lbs tp, 1260 lbs cp, perf 6460-80 ft, gas/oil ratio 837/1, td 6670 ft.

San Patricio County: Midway — British American's Boynkin 1, sec J, temp abnd 6126 ft.

Pan American's O. L. Smith 1-B, sec 72, 65 bbls, 3/32-in ch, 2200 lbs wp, gas/oil ratio 4499/1, perf 6048-52 ft, td 8503 ft.

San Patricio County: Odem—Seaboard's H. A. Smith 6, Hart & Sons gr, 110 bbls 32.2-gr, ¼-in ch, 850 lbs tp, 2000 lbs cp, gas/oil ratio 600/1, perf 5323-26 ft, td 5570 ft.

Seaboard's Welder 5-B, Hart and Sons gr, 120 bbls 33.2-gr, ⅛-in ch, 720 lbs tp, 1200 lbs cp, gas/oil ratio 400/1, perf 5317/19 ft, td 5810 ft.

Seaboard's Welder 6-B, Hart & Sons gr, 105 bbls 42-gr, ⅛-in ch, 600 lbs tp, 775 lbs cp, gas/oil ratio 450/1, perf 5420-30 ft, td 5442 ft.

Seaboard's Welder 4-C, Hart & Sons gr, 115 bbls 33.5-gr, ⅛-in ch, 1525 lbs tp, 2000 lbs cp, perf 5265-68 ft, td 5385 ft.

LOWER GULF COAST WILDCAT COMPLETIONS

Fayette County: Cistern field discovery—Continental's Gabitzsch 1, J. Whitesides sur, 1 mi nw Cistern townsite, dry gas well, 38,500,000 cu ft open flow thru 2-in tbg, 473,000 cu ft thru 5/32-in ch, 671,000 cu ft thru 3/16-in ch, 840 lbs tp, 1,254,000 cu ft thru ¼-in ch, perf 2808-18 ft, Wilcox sd 2808-25 ft, td 4320 ft.

Hidalgo County—Phillips' Daskam 1, Por 45, 3½ mi se Sullivan City, abnd 6507 ft.

Jim Wells County: New Field Discovery—Kilgore Developers' Mrs. B. Stratman 1, Casa Blanca gr, 3 mi e Orange Grove, est 20,000,000 cu ft gas, odor of cond, SIP 2850 lbs, perf 5074-78 ft, td 5790 ft.

LOWER GULF COAST WILDCAT STARTS

Bee County—Rowe & McBride's White 2, 1980 ft nw, 660 ft ne lines 274-ac tr, H. H. Williams sur, 4 mi n Tynan, 4750-ft test.

Cameron County — Pure's Gatewood-Newberry 1, 5573.76-ac lse, Skelton sur, 7½ mi nw Pt. Isabel, 6500-ft test.

Jim Wells County—Rowe & McBride's Corbett 1, 660 ft n 467 ft e and w lines 40-ac lse, blk 46, Dibrell sub, Wade ranch, Casa Blanca gr, 1 mi ne Sandia, 5500-ft test.

SOUTHWEST TEXAS WILDCAT STARTS

McMullen County—Quintana's South Texas 2-C, near center nw¼ sec 18, 11 m s Fowlerton, 10,000-ft test.

Starr County—Sun's V. Guerrero 1, Las Comitas Gr, 29 mi ne Rio Grande City, 5500-ft test.

SOUTHWEST TEXAS FIELD COMPLETIONS

Jim Hogg County: Colorado — Humble's King-Colorado 71-B, Las Moretas Gr, 176.56 bbls 46.5-gr, 3/16-in ch, 250 lbs tp, 440 lbs cp, gas/oil ratio 180/1, sd 3107½ ft, 5½-in cas, 3096 ft, td 3117 ft.

Sun's East 2-C, Las Moretas gr, 124.52 bbls 47.5-gr 3/16-in ch, 225 lbs tp, 525 lbs cp, gas/oil ratio 100/1, sd 3084 ft, 5½-in cas, 3078 ft, td 3094 ft.

Starr County: Rincon—Humble's San Antonio L&T Co. 1, sur 504, 80 bbls 39.2-gr, 9/64-in ch, 450 lbs tp, 1200 lbs cp, gas/oil ratio 210/1, sd 3784 ft, 5½-in cas 3782 ft, td 3791 ft.

Starr County: Yturria—Sun's Garcia 3-B, Por 100, abnd 4622 ft.

SOUTHWEST TEXAS WILDCAT COMPLETIONS

Duval County: Failure—William McGuffin's Gallagher 1, sec 14, 15 mi nw San Diego, abnd 3207 ft.

Starr County: Failure—D. Davenport's D. Garza 1, sh 37-B, Por 80, 10 mi n Rio Grande City, abnd 4105 ft.

Texas Gulf Coast

Ohio Opens Frio Sand Field in Matagorda Area

Frio sand field opened in Jennings Lake area, Matagorda County. Potential test completed on Cockfield sand discovery in Hardin County. Drilling increases with 6 wildcats projected in 10 days.

Matagorda County: Ohio Oil Company is drilling to contract depth before setting pipe to make production test in McDonald 1, Frio sand discovery well in Jennings Lake area. Two sands have been cored in the wildcat, which is northwest of Bay City field and northeast of North Markham production. The first sand was cored at 7865-84 ft in the Cornelius zone of Middle Frio. On a drill stem test of this level, operators recovered 46 stands or approximately 4100 ft of 34.8 gravity pipe line in 15 minutes. The second sand, which indicated gas and distillate, was cored at 8031-81 ft in Markham sand. Both horizons correspond to producing zones in North Markham, although the new discovery is around 200 ft downdip.

Hardin County: American Republics and Houston Oil Company have completed discovery well in Hampton area, making second Cockfield sand field the operators have opened in recent months. The first was at West Silsbee. Latest strike is Hampton 1, which flowed 517 barrels 40.4 gravity oil through ¼-in choke from 6949-54 ft. Screen was set in hole for test. Tubing pressure was 850 pounds, casing 1150. The companies own several thousand acres in area. No new locations have been announced.

Wildcats: Gulf Coast drilling showed a large increase last week with six new wells projected. One will be drilled north of Baker and another east of Humble in Harris County; one in Fort Bend County; one in San Jacinto County; one in Matagorda County, and the other in Wharton County. This is the largest number to be announced in a 7-day period since January 1, 1942.

Wilcox Trend: Jordan Drilling Company is running potential test on Munson 1, Wilcox sand discovery in Livingston field, Polk County. Well was perforated at 7038-52 ft and flowed at rate of 15 barrels hourly through ¼-in choke while cleaning. Total depth is 7397 ft.

Superior and Atlantic are preparing to make production test in McMahan 1, deep wildcat east of Lake Creek field, Montgomery County. Drilled to 12,480 ft, opertors plugged back to 12,310 ft to test several sections in Wilcox that indicated production on electrical survey. If productive, the well will extend production 2½ miles easterly.

TEXAS GULF COAST FIELD COMPLETIONS

Brazoria County: West Columbia—Smith Salvage Co.'s Masterson 4, 50 ft fr s & 1231 ft fr el lse, George Tennile sur, Pumped 145 bbls 22.6 gr, td 1725 ft.

Harris County: Alief—Pure's Siadous 1, 4651 ft fr sl & 524 ft fr e & w lines of 200-ac lse Henry Lewis sur, abnd 8428 ft.

Harris County: Barbers Hill—Texas Gulf Producing's Winfree 1, 50 ft fr s & 75 ft fr wl lse, W. D. Smith sur, flowed 110 bbls 3/16-in chk, tp 265, cp 500, td 6122 ft.

Matagorda County: Lucky—Stanolind's Wolf 2, 3261 ft fr most w'ly nl, 2325 ft fr most e'ly wl 2172-ac tr, Lower Henry Harrison sur, took sws, abnd 9250 ft.

Montgomery County: Lake Creek—Superior's McWhorter 4, 1850 ft fr sl & 6200 ft fr el, T. J. Nichols sur, perf 9280-90 ft, flowed 212 bbls 56.4 gr ¼-in chk, tp 1700, cp 2000, td 10,323 ft.

Waller County: Katy—Stanolind's Peck 1, 2225 ft fr e & 1240 ft fr nl sec 107, H.T.C. sur, set screen 7226-7305 ft, flowed 200,000 cf gas open flow, tp 1100, cp 2800, td 7305 ft.

Wharton County: Withers—F. W. Michaux's Pierce Est. 46, 4120 ft fr sel Westall sur, flowed 155 bbls 25.9 gr 5/32-in chk, cp 600, tp 550, gor 297/1, td 5382 ft.

TEXAS GULF COAST WILDCAT START

Tyler County — Ralph Fair's Sturrock 1, Colmesneil area, 2750 ft fr w & 667 ft fr sl 135-ac tr in nw¼ S. L. Graham sur, 7500 ft Wilcox test, preparing spud.

Louisiana Gulf Coast

Canals Dredged for Three Deep Wildcat Operations

Gulf dredging canals for three deep wildcat tests; Pine Prairie flank well to be drilled to Wilcox; deep development scheduled west of Tepetate field after well blows out from new sand.

Wildcats: Gulf Refining Co. is dredging canals to drill three deep wildcats on Delta Securities Co. land, comprising approximately 89,000 acres, which lie in LaFourche, St. Charles, and Terrebonne Parishes. One well will be north of Texas Co.'s Lake Salvador field which produces from Miocene, while a second will be in Camp Bully area on Terrebonne-LaFourche Parish line. Definite location for third wildcat has not been staked. Gulf is reported to have paid a large sum for the leases, and conducted considerable geophysical work before making locations.

Evangeline Parish: Texas Co. is drilling around 11,456 ft in LaDanois 2, second deep well on flank of Pine Prairie dome. The well is in sidetracked hole, being deviated at 5808 ft after sticking drill pipe. In second hole, operators found several shows in Sparta section, and based upon these findings the Wilcox will be tested for the first time on flank of this salt dome. A directional survey was run at 10,356 ft.

Acadia Parish: Contienntal Oil Co. is due to drill a deep test west of Tepetate to test the Lewisburg or Kump pay after a test drilled by Vincent and Welsh blew out from a new sand. The well is scheduled to go to 9500 or 10,000 ft, although the Vincent and Welsh semi-wildcat blew out from around 9400 ft, and was abandoned when hole was lost. Meanwhile, the later operators have been unitizing acreage for future development. The field's regular pay is found around 8300 ft.

Deep Tests: Superior Oil Co. is drilling below 13,009 ft in LaTerre Land Co. 1, deep test in Jug Lake area, Terrebonne Parish. Electrical survey was run to 12,707 ft, no shows reported.

Sun Oil is drilling below 12,000 ft in Belle Isle-State 1, wildcat in Belle Isle area, St. Mary Parish.

Humble is preparing to drill a deep test on Duplessis prospect, Ascension Parish. It is Gantreau 1, located in sec 8-9s-3e. The prospect is north of Duplessis townsite and about 12 miles northwest of Sorrento dome. It will be the first deep well in area.

SOUTH LOUISIANA FIELD COMPLETIONS

Calcasieu Parish: Edgerly—Gulf's Louisiana Sulphur Mining 1, 2900 ft s and 1630 ft fr w ne cor 33-9s-11w, abnd 9856 ft.

Jefferson Parish: Westwego — Titanic Oil Co.'s Marrero Land 2, n 19 deg 29 mins e 4900 ft and s 70 deg 31 mins e 30 ft fr sw cor 2-13s-23e, perf 9001-05 ft, flowed 127 bbls ⅛-in chk, td 11,511 ft.

LaFourche Parish: Raceland — Amerada's South Coast 10, fr nw cor sec 34, go s 50 deg 35 mins e for 1879 ft, thence n 76 deg 11 mins e for 5697 ft, thence s 8 deg 38 mins e 1635 ft in 34-15s-19e, perf 7170-80 ft, flowed 155 bbls 36.1-gr ⅛-in chk, td 8425 ft.

Vermilion Parish: Gueydan—Fohs' Evans 2, 977 ft w and 1780 ft n of se cor 27-11s-1w, perf 9742-56 ft, flowed 301 bbls 31.9-gr 12/64-in chk, td 9808 ft.

SOUTH LOUISIANA WILDCAT COMPLETIONS

Livingston Parish: Failure—Danciger's Dendinger 1, Tickfaw area, fr sw cor sec 37, go 513 ft n 84 deg e, thence 400 ft n 6 deg w to lcn in 37-8s-7e, abnd 10,450 ft.

Pointe Coupee Parish: Failure—Humble's Pointe Coupee Land Co. 1, Morganza area, 2000-ac blk, begin sw cor sec 68, go n alg wl approx 1433 ft, thence 2913 ft at ra in 68-4s-8e, abnd 11,252 ft.

St. Landry Parish: New Sand—Stanolind's Dohmann 1, Lewisburg field area, 660 ft n and e of sw cor se se 8-7s-3e, perf 9090-9105 ft, flowed 87 bbls 53.1-gr dist ¼-in chk, tp 2400, cp 3200, gor 49, 750-1, td 10,872 ft.

SOUTH LOUISIANA WILDCAT STARTS

Ascension Parish — Humble's Gautreau 1. Fr nw cor sec 8 go n 89 deg 34 mins e 669 ft alg nl and s 00 deg 05 mins e 665 ft to lcn in 8-9s-3e, company rig, lcn.

Vermilion Parish—Union Oil Co.'s Louisiana Furs 1, Chenier au Tigre area, 16,395 ft s and 14,554 ft e of se cor T-15s-1e in 21-16s-2e.

North Louisiana

Wilcox Strike for Eastern Concordia Parish

Unofficial reports say oil strike in Concordia Parish indicates new Wilcox field. Morehouse Parish wildcat drills ahead after show of oil, gas and salt water. Wildcat east of Haynesville, Claiborne Parish, and wildcat in Natchitoches Parish abandoned. Four more oilers at Haynesville field, Claiborne Parish.

Concordia Parish: California Co.'s Pan-American Life Insurance Company 2, center NW¼ 16-9n-10e, on which official information has been withheld, is reported flowing high grade oil free of salt water to tanks, from approximately 4500 ft in Wilcox. Well is on Killarney plantation 1½ miles from Mississippi River. Pipe was perforated at 4660-72 for first test which showed salt water and further testing followed after squeeze job. Location reported staked for California Co.'s Pan-American Life Insurance Company 3. Operator's No. 1, west of No. 2 by 1000 ft, now reported on production, making about 120 bbls daily water-white distillate and 5,000,000 cubic feet of gas on ¼-inch choke with 2000 pounds pressure from 8926-46, below Wilcox.

Morehouse Parish: Union Producing Co.'s Crossett Timber and Development Company Unit A-1, C SW NE 6-22n-6e, northeast of Monroe gas field, is drilling ahead below 4500 ft after drill stem test at 3707 showed oil, gas and salt water.

Caddo Parish: Shreveport field east outpost which ran into saturation only to lose drill string and develop fishing and sidetracking job has abandoned old hole and skidded over for new start. Well is Bering Oil Co.'s Noel Unit No. 1, section 25-18-14, and No. 2 location operations may be delayed pending completion of No. 1.

NORTH LOUISIANA COMPLETIONS

Claiborne Parish: Wildcat—H. L. Hunt's Owens et al's 1, c ne sw 13-23n-7w, small gas show reported 4100 ft, abnd 6008 ft.

Natchitoches Parish: Wildcat—George H. Echols' Goodpine Oil Co. 1, c ne ne 13-13n-8w, pipe set to 5520 ft, tested salt water, abnd 5520 ft.

Claiborne Parish: Haynesville — Ohio Oil Co.'s G. W. Taylor Acct. 3-P 2, 567 ft n and 678 ft e of sw cor 14-23n-8w, perf 5166-99, flow 1055 bbls, ¼-in, cp 600 lbs, tp 525 lbs.

Arkansas Fuel Oil Co.'s Waller-Taylor Unit 1, c ne se 14-23n-8w, flow 350 bbls in 14 hrs, ¼-in, cp 750 lbs, tp 480 lbs, td 5351 ft.

Gulf Refining Co.'s Seegers Community A-1, 663 ft w & 760 ft s ne cor nw 11-23n-8w, flow 532 bbls 15 hrs, 24/64-in, cp 675, tp 700 lbs, td 5390 ft.

White and Hughes' J. P. Lowe 1, c sw nw 16-23n-8w, flow 300 bbls 16 hrs, ¼-in, cp 850 lbs, tp 750 lbs, td 5494 ft.

Webster Parish: Carterville — Placid Oil Co.'s Pine Woods Lumber Co. 1, pump 12 bbls distillate.

LaSalle Parish: Nebo — Placid Oil Co.'s Hailey 1, c ne se 3-7n-3e, 324 bbls 16/64-in.

NORTH LOUISIANA WILDCAT START

Madison Parish—Continental Oil Co.'s R. B. Watts 2, from se cor sec 41, go n 24 degrees 45 minutes w along section line 363 ft, thence n 82 degrees 30 minutes w parallel to n line of section 390 in section 41-15n-13e.

Arkansas

Second Producer for New London Field

New London field of eastern Union County yields second producer. Western outpost at Midway field of Lafayette County abandoned. Union and Miller counties get new Smackover lime wildcats.

Nevada County: Wakefield Oil Company cored salt water at 3800 feet in wildcat, Saunders-Rouse 1, section 4-12-23, shut down.

ARKANSAS COMPLETIONS

Union County: New London—Marine Oil Co.'s Percy Walton 1, c ne nw 13-18-12, perf 5716-28, in Cotton Valley, series flow 150 bbls 16 hrs, average choke, 31-gr, tp 250 lbs.

Lafayette County: Midway—Barnsdall Oil Co.'s Spencer Gunter 1, 5-15-24, found saturation mixed with salt water at 6555 ft, not comemrcial, abnd.

Barnsdall's McClain 1, 13-15-24, flow 548 bbls 36.5-gr, ¼-in, 18th producer for field.

ARKANSAS WILDCAT STARTS

Union County—Crescent Drilling Co. Root 1, c ne ne 25-18-15, to be drilled to 8000 ft, building roads.

Miller County—Tide Water Associated Oil Co. and Barnsdall Oil Co. L. Sutton 1, nw sw 2-15-26.

Mississippi

MISSISSIPPI COMPLETIONS

Oktibbeha County—John Allen Howell 1, 950 ft from n line 900 ft from east line, ne sw sec 2-19n-13e, topped Eutaw 725 ft, Tuscaloosa 1000 ft, Lower Cretaceous 1644 ft, Paleozoic 2321, td 4974 ft, dry and abnd.

Winston County — Garson and Grober Chancellor 1, 610 ft n and 760 ft e of sw cor of se¼ 9-13n-14e, tops, Selma 790 ft, Eutaw 1660 ft, Tuscaloosa 2085 ft, td 4080 ft, dry and abnd.

MISSISSIPPI WILDCAT STARTS

Warren County—Roy Lee, trustee (Hassie Hunt) Anderson-Tulley Lumber Co. 1, c nw ne 36-18n-4e, on southeast end of Haynes Bluff prospect, to be carried to 6500 ft; S. D. Johnson, Wichita Falls, Texas, has interest in block of 4000 acres; lcn, building road.

Wilkinson County—Bering Oil Co.'s Crosby Lumber Co. 1, c sw sw 10-3n-1e, location previously announced as Danciger Oil and Refining Co., rigging up.

Lincoln County — Freeport Sulphur Co.'s Clark 1, 1480 ft e, 700 ft n, sw cor 15-6n-9e, core hole, spud.

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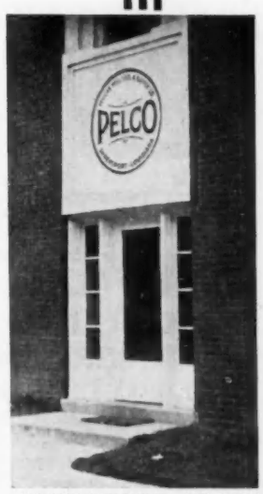

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California

Two Wildcat Operations Are Abandoned

Burrel area, Fresno County, wildcat test finds Eocene being abandoned. Extension test slated for Jacalitos Hills district. San Luis Obispo shallow test abandoned.

Fresno County: Richfield's deep test Schultz 1, 27-16-18, Burrel area, failed to find sufficient showings in the Temblor to warrant formation test and is being abandoned. Bottom placed at 7801 ft in gray Eocene sand.

Location has been staked by The Texas Company for Ferguson 1, 32-21-16, Jacalitos Hills area, three miles southeast of Wilshire Annex discovery of shallow production in this area. Pacific Western, Standard, Fullerton Oil Company also have holdings in area.

San Luis Obispo County: Richfield's Blakey 1 wildcat, Sec 20-31-20, Carrizo Plains area, failed to encounter showings of importance and is being abandoned at 2462 ft.

CALIFORNIA COMPLETIONS

Kern County: Antelope Hills Area—Shell's Williams' 67-6; 4278 ft s 1667 ft w ne cor 6-28-20. Flowed 25 barrels salt water, small amount gas perf 1846-2005, 2041-2188 ft, td 3419 ft.

Kern County: Belridge-South—Union's Hopkins 21-10; 330 ft s 990 ft e nw cor 10-29-21, pumped 19 barrels 14.5-gr 45 ft perf ldd 1128 ft, td 1198 ft.

Kern County: Mount Poso—Signal Oil & Gas Co.'s Glide 23-2; 608 ft n 535 ft e sw cor 23-27-28, pumped 85 barrels 16-gr 10 ft, perf ldd 1488 ft, td 1488 ft.

Orange County: Huntington Beach—J. H. Marion's Fee 1, 135 ft s 260 ft w ne cor s½ sw¼ nw¼ sw¼ 36-5-11, pumped to sump, no est, 45 ft perf ldd 4155 ft, td 4155 ft.

Sutter County: Rio Vista Gas Field—Texas Co.'s Huth Unit 2; 4400 ft n 1350 ft e sw lease cor 28-4-3, flowed 12,000 mcf gas 34/64 bean, 1500 lbs flow pressure 65 ft, perf ldd 3886 ft, td 3886 ft.

San Luis Obispo County Wildcat Failure: Carrizo Plains Area—Richfield's Blakey 1; 330 ft n 330 ft e sw cor 20-31-20, td 2462, no showings, abnd.

CALIFORNIA WILDCAT STARTS

Fresno County—Amerada Petroleum Corp.'s Whitty 72-1; 1-17-17, 1cn Burrel area.

Kern County—Chanslor Canfield Midway Oil Co.'s Thomas 1; 1-31-21, 1cn Midway-Northwest area.

Los Angeles County—The Texas Co.'s Towle 1; 3-4-17, 1cn Castaic area.

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Rocky Mountain Area

South Cole Creek Test Cores Saturated Shannon

Core saturation Shannon at South Cole Creek test, Wyoming. Texas extends Wilson Creek, Colorado, quarter mile east. Drilling program gets under way newly proved deep zone at Pilot Butte.

South Cole Creek: General Petroleum Corporation's 7-17-P, NW SW SW 17-34n-76w, South Cole Creek wildcat, Converse County, Wyoming, cored seven ft of saturated porous sand in Shannon sand 4895-4902 ft, indicating good possibilities in lower sands. Because of the thinning of section G-P elected to pass Shannon for time being and is drilling ahead at 5235 ft for Dakota series.

Antelope Gap: G-P's 34-15-P, SW SE NW 15-24n-66w, Platte County, Wyoming wildcat, cored Muddy from 2929-47 ft had slight show of oil. Drill stem seated 2925 ft bottom at 2947 ft yielded 200 ft of water. Test drilling at 3200 ft in Upper Morrison shale with Sundance objective close. Test will go through Minnelusa series.

Wilson Creek: Texas Company, Unit Operator on joint acreage with California Company, Wilson Creek field, Colorado, completed Unit 10 NE SE SW 26-3n-96w, quarter mile east extender for 440 bbls flowing 24 hours through ¾-in tubing choke. Total depth 7198 ft, 7-in at 7191 ft, perforated opposite Morrison formation at unreported level.

Pilot Butte: Bringing operations to three wells in Pilot Butte, Wyoming deep sand discovery of less than five weeks ago, British American Oil Company spudding Enos 1, CWL NW NW 22-3n-1w, quarter mile south step-out from Tensleep discovery. Superior Oil is drilling one Pilot well and Superior and British American drilling a joint test.

COLORADO COMPLETION

Rio Blanco County: Wilson Creek—Texas Co. and California Co.'s Unit 10, ne se sw 26-3n-94w, flowing 400 bbls through ¾-in choke, perforated opposite Morrison, 7-in, 7191 ft, td 7198 ft, quarter mile east extension.

MONTANA COMPLETIONS

Glacier County: Cut Bank—Levi Burd's Tribal 1-124, c sw nw 18-32n-5w, swabbing 65 bbls, Lower Cut Bank 2800-2825 ft, td 2843 ft.

Glacier Production Co.'s Lookhoff 6, c nw se 33-33n-5w, swabbing 421 bbls, 7-in 2883 ft, Lower Cut Bank 2883-99 ft, td 2901 ft, elev 3812 ft.

Glacier's McKenzie-Tribal 1-212, nw sw nw 29-32n-5w, pb 2800 ft, no Sunburst sand, no Lower Cut Bank, Upper Cut Bank 2731-96, swabbed 16 bbls, td 2865 ft, elev 3567 ft.

Texas Co.'s Sherburne 2, c ne nw 10-34n-6w, Main pay below Lower Cut Bank in streaks from 2941-43 and 2945-47 ft, swabbed 15 bbls, td 2980 ft, elev 3800 ft.

Phillips County: Bowdoin Dome—Montana Dakota Utilities Co.'s Phoenix Mutual 661, c nw nw 28-32n-32e, 1.09 gas, Bowdoin sand 760-820 ft, Phillips sand 920-990 ft, 5½-in csg 751 ft, 4½-in liner perforated 935-1033 ft td, 225 lbs rock pressure.

WYOMING COMPLETION

Fremont County: Circle Ridge—Continental's Shoshone Indian Lease 2-309, nw sw nw 6-6n-3w, pumping 500 bbls, td 613 ft.

Michigan

Norwich Wildcat Looks Like a Good Producer

A Norwich Township wildcat appeared to have a god chance of opening a new field, while the third offset disappointment was completed in the new Riverside field.

Norwich: Sun Oil Company's Horner 2, S½ SW SW 11-24n-5w, Missaukee County, was shut down at 4412 ft in unclassified zone of Monroe section after flowing an estimated 25 bbls of oil through 3000 ft of water. Sulphur gas pay logged at 4090-4129 ft was so heavy that company plans to run tubing and kill, then ream hole and reset casing to top of oil zone.

Riverside: Third consecutive offset to drill objective dry, Ohio's Bell 1, N½ NE NW 14-21n-7w, had Dundee at 3969 ft, 24 ft lower than discovery 1320 ft to south, and drilled into water zone at 3972 ft. South and southwest offsets drilled dry earlier. Discovery well, only producer so far, despite 15 to 30 percent water cut, still flowing 110 to 130 bbls oil daily.

State Sale: With its leased acreage now over 380,000 acres, an all-time high, the State will offer another 46,900 acres at a two-day auction in Lansing, June 25 and 26. All the acreage to be offered is wildcat, including 19,000 acres in Newaygo County.

MICHIGAN FIELD COMPLETIONS

Allegan County: Hopkins—Perry, Gould & Cross' Nicolai 2, sw ne ne 18-3n-12w, Traverse lime, pump & flow 105 bbls, td 1566 ft.

Allegan County: Trowbridge—John F. Burton's Dickonson 1, ne ne sw 31-1n-13w, Traverse lime, pumped 41 bbls, td 1332 ft.

Clare County: West Winterfield—Cities Service Oil Co.'s Phares 4, w½ ne ne 32-20n-6w, Monroe lime, dry, td 3778 ft.

Gladwin County: South Beaverton—Sun Oil Co.'s Church 1, e½ ne nw 35-17n-2w, Dundee lime, swabbed 16 bbls nip, flowed 197 bbls 23 hrs after acid, td 3880 ft.

Missaukee County: Riverside—Ohio Oil Co.'s Bell 1, n½ ne nw 14-21n-7w, Dundee 3964 ft, td 3967 ft, dry.

Gulf Refining Co.'s Cavanagh 1, n½ ne sw 14-21n-7w, Dundee 3948 ft, dry, td, 3953 ft.

Pure Oil Co.'s Whittet 1, n½ nw sw 14-21n-7w, Dundee 3969 ft, dry, td 3978½ ft.

Mecosta County: Failure—Taggart Bros. Co.'s Long 18, c nw 12-12n-10w, Stray sand, 1,900,000 gas, td 1121 ft.

Taggart Bros. Co.'s Lovegran 21, c w½ 7-12n-9w, Stray sand, 12,000,000 gas, td 1122 ft.

Taggart Bros. Co.'s Schnick-Hayes 20, c ne 18-12n-9w, Stray sand, 13,100,000 gas, td 1119 ft.

Ottawa County: Tallmadge—Oil Producers, Inc.'s Cross 2, e½ se ne 15-7n-13w, Traverse lime, pump 20 bbls, td 1836 ft.

MICHIGAN WILDCAT COMPLETIONS

Oakland County: Failure—Frank Summers et al's Ellis 1, ne sw se 14-4n-8e, abnd, 4887 ft.

Mecosta County: Failure—Taggart Bros. Co.'s Harter 1, s½ se ne 16n-10w, Stray sand, dry, td 1198 ft.

Roscommon County: Headquarters New Sand—Sun Oil Co.'s State A-2, n½ nw sw

33-21n-3w, Monroe dolomite, pay 4957 ft, 1600 ft oil 19 hrs, treated 1000 gals acid, flow 98 bbls.

Van Buren County: Failure—Slapsaddle & Harris' Stanek 1, sw ne se 3-4s-14w, Traverse lime 1067 ft, td 1116 ft, dry.

Wayne County: New Field — Sumpter & Bonanza Oil Co.'s DeRoy 1, s½ sw se 22-4s-8e, Trenton lime 2507 ft, td 2564 ft, pump 30 bbls after acid and shot.

MICHIGAN WILDCAT START

Mecosta County—C. W. Teater's Wood 1, n½ nw ne 2-15n-7w, dr.

Eastern States

SOUTHWEST PENNSYLVANIA COMPLETIONS

Clarion County — T. Swartsfager et al's Reinsel 4, 0.09 2798 ft.

Fayette County — Peoples Natural Gas' Kirchner 1, 0.82 gas, 1432 ft.

Mfgrs. Light & Heat Co.'s McCullough 1, abnd, 3634 ft.

E. C. Metzler et al's Barb heirs, 0.45 gas, 1585 ft.

Washington County—Morris et al's Smith 1, abnd, 2718 ft.

Westmoreland County — Kiski Valley Gas Co.'s Kier 1, 0.56 gas, 3452 ft.

OLD WELL DRILLED DEEPER

Greene County—Equitable Gas Co.'s Gideon 1, abnd, 2968 ft.

WEST VIRGINIA COMPLETIONS

Calhoun County—Jackson River Oil Co.'s Yaok & McDonald 3, 40 bbls, 2239 ft.

Hope Natural's Boggs-Pearcy 8604, 0.44 gas, 1297 ft.

A. M. Cooker's Bush 1, 3 bbls, 1648 ft.

Jackson County—United Carbon Co.'s Perkins 1018, 8.26 gas, 5152 ft.

United Carbon Co.'s Parsons 974, 10.5 gas, 5105 ft.

United Carbon Co.'s Perkins 12, 8.26 gas, 5152 ft.

West Va. Gas Corp.'s Staats 1, 7.12 gas, 5160 ft.

Logan County—O. B. Cunningham's Workman, Mullins & Spratt 1, 0.04 gas, 2433 ft.

Mingo County—McKinley Trent, Tr., Stepp 6, 0.05 gas, 3056 ft.

Putnam County—Charles Gas Co.'s Johnson 2, 0.17 gas, 2383 ft.

Ritchie County—Hartman & Richards' Fee 3, abnd, 1901 ft.

Upshur County—Hanley & Bird's Ogden 1, gas, 4417 ft.

Wood County—C. B. Smith's Millinger 1, 1½ bbls, 1630 ft.

OLD WELLS DRILLED DEEPER

Gilmer County—United Fuel Gas Co.'s Porter 4932 ft, 0.2 gas, deepened from 1425 to 3192 ft.

Ritchie County—F. H. Bickel's McCosh 1, abnd, 1926 ft.

NEW YORK COMPLETIONS

Allegany County — Bradley Prod. Corp., Bescom farm, Alma, 9 bbls, Richburg, 1369 ft.

New York Oil Co., Goldsby farm, Bolivar, 6 bbls, Waugh-Porter, 1379 ft.

Sawyer Prod. Co., Mix farm, Bolivar, 8 bbls, Waugh-Porter, 1563 ft.

South Bolivar Oil Co., McKelvey farm, Bolivar, 8 bbls, Richburg, 1314 ft.

South Bolivar Oil Co., McKelvey farm, Bolivar, 6 bbls, Richburg, 1322 ft.

Star Oil Co., Neff farm, Wirt, 10 bbls, Richburg, 1338 ft.

Richardson Pet. Co., Norton farm, Scio, 8 bbls, Richburg, 1268 ft.

Messer Oil Corp. M, Russel farm, Alma, 14 bbls, Richburg, 1374 ft.

Hanson & Ehret, Gordon farm, Scio, 7 bbls, Richburg, 1157 ft.

Trio Oil Co., Wetherby farm, Bolivar, 15 bbls, Richburg, 1388 ft.

L. H. Thornton et al, Fassett farm, Willing, 9 bbls, Fords Brook, 1237 ft.

Quaker Oil Co., Brown farm, Alma, 6 bbls, Fords Brook, 1322 ft.

Deer Creek Oil Co., Hall farm, Genesee, 7 bbls, Richburg, 1338 ft.

Messer Oil Co., Koehler farm, Clarksville, 9 bbls, Richburg, 1352 ft.

WATER INTAKE WELLS

Allegany County—Vosburg Oil Co., Green farm, Bolivar, Richburg, 1270 ft.

Sawyer Prod. Co., Mix farm, Bolivar, Richburg, 1536 ft.

South Bolivar Oil Co., McKelvey farm, Bolivar, Richburg, 1340 ft.

Sawyer Prod. Co., Beers farm, Bolivar, Richburg, 1360 ft.

Hog Brook Oil Co., Pike farm, Alma, Richburg, 1373 ft.

Bradley Prod. Corp., Rolls farm, Alma, Richburg, 1166 ft.

L. E. Norton et al, Coats farm, Scio, Richburg, 1288 ft.

McEbenwood Oil Co., McAndrews farm, Andover, Penny, 1337 ft.

Cousins Oil Co., Brandes farm, Wellsville, Fulmer, 1372 ft.

Bradley Prod. Corp., Smith-Gray farm, Clarksville, Richburg, 1261 ft.

Shamrock Oil Co., Frost farm, Genesee, Richburg, 1366 ft.

New York Oil Co., Brown farm, Bolivar, Waugh-Porter, 1388 ft.

OHIO COMPLETIONS

Athens County—C. A. Cody's Smith 1, 0.1 gas, 1687 ft.

Cuyahoga County—H. C. Crow et al's Va. State Bank 1, 0.18 gas, 3600 ft.

Hocking County — Kachelmacker estate's Poston 2, 0.5 gas, 415 ft.

Holmes County—Ohio Fuel's Jones 1, 0.22 gas, 3319 ft.

Licking County—Ohio Fuel's Haluczik 1, 0.21 gas, 2491 ft.

Lorraine County—Ohio Fuel's Patterson 1, 1.15 gas, 2656 ft.

Medina County—Harry W. Patterson's Garver 1-H, 10 bbls, 395 ft.

Harry W. Patterson's Garver 4-H, 25 bbls, 396 ft.

Meigs County—Fleming et al's Nelson 2, 0.6 gas, 784 ft.

Ohio Fuel's McKennedy 1, 0.14 gas, 857 ft.

Morgan County—Swingle et al's Spring 1, 0.13 gas, 1132 ft.

Bern O. & G. Co.'s Edgerton 2, abnd 1045 ft.

Muskingum County—Ohio Fuel's Kirkbride 1, 0.59 gas, 4010 ft.

Noble County—William Lorrick et al's Snyder 1, abnd 1683 ft.

Perry County—Marshall & Marshall's Donahue heirs, 2 bbls, 1139 ft.

Stark County—East Ohio's Hawk 1, 1.25 gas, 4550 ft.

Washington County—Newport Oil Co.'s Adkins 25, ½ bbl, 455 ft.

Consolidated Oil Co.'s Ruble 1, abnd 3071 ft.

R. W. Porter's Marten 1, 0.25 gas, 1250 ft.

INPUT WELL

Medina County—J. S. Swann's Clark 4, 409 ft.

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SAND-BANUM removes old and prevents new boiler scale and corrosion, regardless of water or operating conditions.

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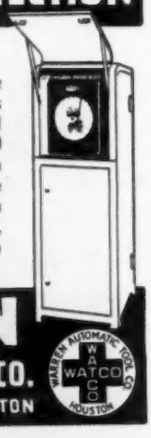
"Mud-O-Graf"

LOWER MUD COSTS AND BLOWOUT PROTECTION

An Engineer says:
"'Mud-O-Graf' should be on any well where it is necessary to carry the mud density higher than 10 pounds per gallon — on deep wildcats or wells where there may be trouble with stuck drill pipe, gassy mud, or salt water contamination of mud."



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Men in the Industry's News

LESTER M. GOLDSMITH, chief engineer of the Atlantic Refining Company, was granted the honorary degree of Doctor of Science by Drexel Institute of Technology, Philadelphia, his alma mater, June 13. He was cited as "an engineer of national distinction, particularly in the field of petroleum transportation, and a recognized authority on the propulsion of ships by both diesel engines and steam turbines. His contributions have signally advanced the state of naval engineering and have greatly promoted the welfare of our country in time of peace no less than in time of war."

D. T. RING, Preston Oil Company, Columbus, Ohio, has been appointed chairman of the Central Committee on District Activities of the American Petroleum Institute's Division of Production. C. A. Young, of the institute, is secretary.

Committee members, who are appointed to represent the district officials and advisory committees and other central committees of the institute, are: E. L. Adams, General Petroleum Corporation, California; George Berlin, Skelly Oil Company, Pampa, Texas; M. E. Brock, Gulf Oil Corporation, Houston, Texas; George P. Bunn, Phillips Petroleum Company, Bartlesville, Oklahoma; R. E. Donovan, Standard Oil Company of California, San Francisco, California; R. O. Garrett, Arkansas Fuel Oil Company, Shreveport, Louisiana; Herbert Goodpaster, Kerlyn Oil Company, Oklahoma City, Oklahoma; M. G. Gulley, Gulf Oil Corporation, Pittsburgh, Pennsylvania; E. P. Hayes, The Texas Company, Houston, Texas; E. K. Parks, Los Angeles, California; B. H. Robinson, General Petroleum Corporation, Los Angeles, California; John R. Suman, Humble Oil & Refining Company, Houston, Texas; T. E. Swigart, Shell Pipe Line Corporation, Houston, Texas; Paul D. Torrey, Houston, Texas; O. W. Van Petten, Columbian Carbon Company, Charleston, West Virginia.

T. S. PETERSEN has been elected a director of Standard Oil Company of California. Joining the company in 1922 as a service station salesman in Portland, Oregon, Petersen at the time of his election to the directorate was general manager of sales, marketing department, San Francisco. He has covered a broad field of selling in the marketing area served by his company and has acted in various executive capacities. Since 1932 he has been identified with the home office, for some years holding executive positions in Standard Stations, Inc., and advancing in 1938 from general sales manager of that subsidiary to assistant to the president of the parent company.

W. J. HOLLOWAY has resigned as assistant Oklahoma representative of Interstate Oil Compact Commission. Governor Phillips has appointed no successor and has indicated his intention of not doing so in the near future.

J. M. TAYLOR has been appointed district manager of Kansas by the American Iron and Machine Works Company, with headquarters in Great Bend. He takes the place vacated by R. E. Craine who recently was transferred to Houston, Texas, as district manager of the Gulf Coast division. Taylor was formerly a sales representative for American Iron and Machine Works Company, and has been associated with the firm for more than seven years. His new position was effective June 1.

W. W. KEELER, Skelly Oil Company geologist in the Indiana area, is temporarily in the headquarters office at Tulsa.

G. R. HENSON has been made manager of Sunray Oil Company's Kansas land department. Henson is widely experienced in the petroleum industry both here and abroad. Immediately prior to his new post he was in charge of drilling and production for A. G. Oliphant Oil Corporation in Louisiana, making headquarters at Shreveport.

O. G. ELBERT, Chas. G. Dibrell, Jr., and S. K. Wilcox, all of Galveston, have organized the Oro Peso Oil Company, with operating headquarters at Midland, Texas. The group are engaged in an active development program in West Texas and New Mexico through the M. & M. Production Company, which has district headquarters at Abilene.

H. K. IHRIG has been appointed district manager of Tulsa district, and John Prichard district manager of the Illinois district by Kobe, Incorporated. Ihrig joined Kobe, Incorporated, in 1940 after having spent several years in the development of special equipment for treating emulsified crude oil, which included a study of these problems in numerous fields throughout the Mid-Continent. After having attended Missouri School of Mines and the Oklahoma A. & M. he was successively employed in the petroleum engineering departments of Wilcox Oil & Gas Company and the Phillips Petroleum Company. Ihrig will make his headquarters in the company's offices at 506 Kennedy Building, Tulsa.

After graduating from the Oklahoma

H. K. IHRIG

JOHN PRICHARD

University, Prichard was for several years actively interested in various field problems of the oil industry, joining Kobe, Incorporated, in 1940, later being made responsible for the company's operations in the Oklahoma City area which position he held until his recent appointment as district manager of the Illinois district. He will maintain his headquarters at the company's offices in Mount Vernon, Illinois.

DR. FRED B. PLUMMER of the Bureau of Economic Geology, Austin, Texas, addressed the Houston Geological Society June 18 on "Origin of Oil Pools" at a Donald C. Barton memorial meeting. Mrs. Barton was honor guest. Barton, until his death, was head of the geological and geophysical departments of Humble Oil & Refining Company. At the same meeting, Dr. J. Armstrong Price of Corpus Christi spoke on "Importance of Physiography in Military Maneuvers."

FRED N. WISE, Humble Oil & Refining Company engineer, has been appointed assistant division engineer in the Gulf Coast division. Other changes in the production department are:

Charles B. Swain, junior petroleum engineer, transferred from the Pyote district to the Hobbs, New Mexico, district as district engineer.

Warren J. Barrett, associate engineer in the Roanoke district, appointed district engineer.

H. D. Dickson, division civil engineer, transferred from the West Texas division to the Katy gas cycling plant as engineer in charge of the construction of this plant.

R. F. Carroll, civil engineer, transferred from the West Texas division to the Louisiana division.

H. F. Auvenshine, gasoline plant chief clerk, transferred from the Flour Bluff gasoline plant to the Lirette district as chief clerk.

W. FERGUSON BARNES has been appointed general sales manager, and J. M. Aitken assistant general manager of sales, for Industrial Products and Equipment Sales Department and the Oil Field Equipment Sales Department of International-Stacey Corporation (International Derrick and Equipment Division), which have been combined. Both men will have headquarters at Columbus, Ohio.

Barnes has been with Ideco since 1939 as manager of the Industrial Products and Equipment Sales Department. He has had an extensive career in the petroleum and construction industries, specializing in engineering and sales work. He was graduated from Kentucky State University with a degree of mechanical engineer. He was previously affiliated with The Texas Company at Houston in the refinery engineering department. The Petroleum Iron Works at Beaumont as chief engineer, and the Union Iron Works at Los Angeles as sales manager, specializing there in refinery construction.

Aitken joined the International Derrick and Equipment Company in 1926 and has served as vice president of International Derrick and Equipment Company of Ohio and in various capacities in the Oil Field Equipment Division. He was formerly associated with Ralston Steel Car Company at Columbus.

O. J. McCULLOUGH, Houston operator and oil tool manufacturer, is president of the M. G. M. Oil Co., Inc., organized with paid in capital stock of $10,000 to develop holdings in Lovelady pool, discovered late last year in Southeast Texas by McCullough, Ed. A. Gillespie and others.

CLARENCE F. McSPADDEN of Electra, Texas, is president of the Tulsa Oil Company, a new concern organized with capital stock of $5000.

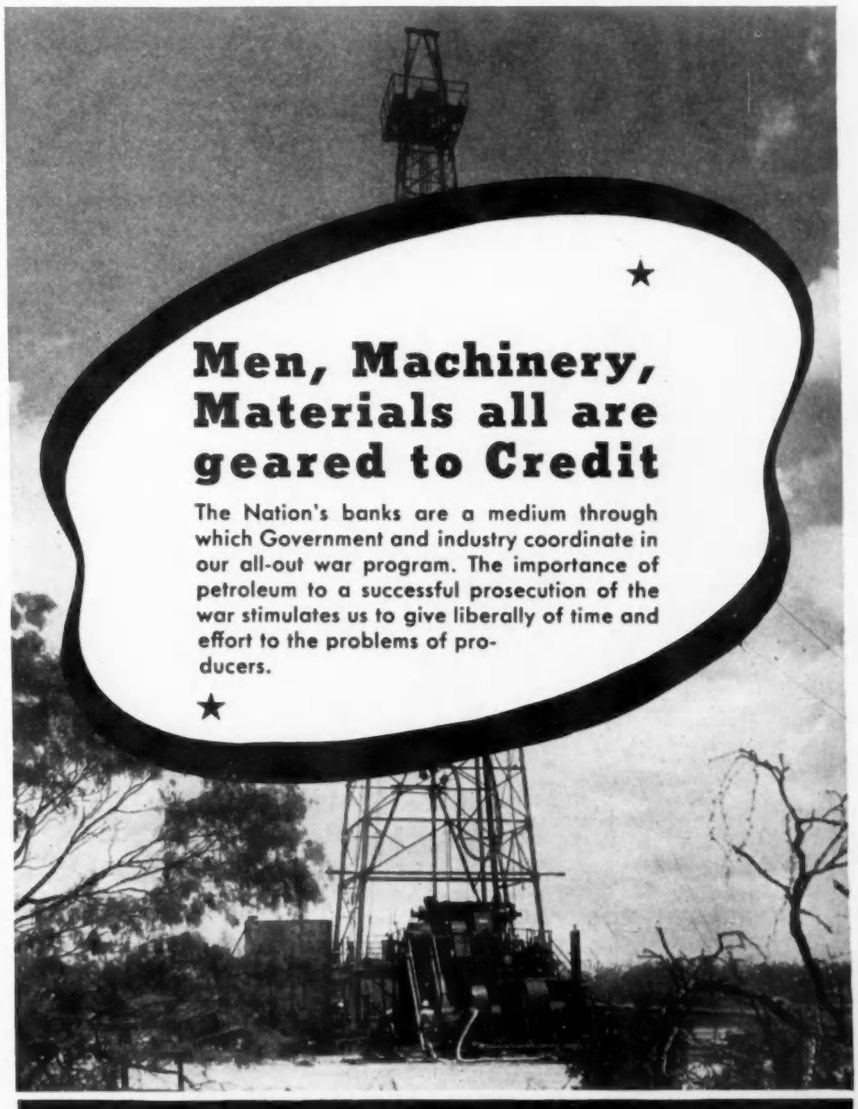
MURRAY C. SELLS, president of Sells Petroleum, Inc., Longview, Texas, has been awarded the honorary degree of Doctor of Science by the John Brown University, Siloam Springs, Arkansas, in appreciation of his interest, generosity and support of the institution.

WILLIAM ARTHUR GEE, 58, station engineer for Humble Pipe Line Company 16 years, died June 16 at San Angelo, Texas, of a heart ailment.

CHARLES J. ATKINSON, 74, veteran West Central Texas operator and former president of the Atkinson-Sandefer Oil Corporation, died June 15 at Breckenridge, where he had resided many years.

DICK SCHWAB, Houston oil man, has been commissioned a lieutenant in the Army Air Corps. He will report for service immediately.

JOHN R. SUMAN, vice president, Humble Oil & Refining Company, Houston, recently was given the honorary degree of doctor of engineering by South Dakota School of Mines.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The Nation's banks are a medium through which Government and industry coordinate in our all-out war program. The importance of petroleum to a successful prosecution of the war stimulates us to give liberally of time and effort to the problems of producers.

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Squeaks from the Bull Wheel

Artistic Diagnosis

"Doctor, I want you to say frankly what's wrong with me."

He surveyed her from head to foot. "Madam," he said at length, "I've just three things to tell you.

"First, your weight should be reduced by nearly fifty pounds.

"Second, you should use about one tenth as much rouge and lipstick.

"And third, I'm an artist—the doctor is out."

Direct Handling

An elderly man put a dime on the Salvation Army drum, then asked the girl in charge: "What do you do with this money?"

"Give it to the Lord."

"How old are you, young lady?"

"Nineteen."

"Then you don't need to bother," said the man as he recovered his dime from the drum. "I'm eighty-seven, so I'll probably see the Lord before you do."

Time's Up

"Talking about Africa makes me think of the time—"

"Good gracious, you're quite right. I had no idea it was so late. Goodby."

Conscience Salve

The boss plumber was absorbed in the intricacies of the job he was working on, apparently oblivious to his new apprentice who stood looking on.

"Say," inquired the lad, "do you charge for my time?"

"Sure, I'm gonna put it in the bill," was the reply.

"But I haven't done anything," the helper protested.

The plumber gazed at him a moment in silent pity. Then he turned to make a final inspection of the finished job by the light of the candle. Satisfied that all was okay, he handed the stub of the candle to the helper and said, witheringly, "All right, kid, if you gotta be so conscientious, blow that out!"

Overhead

"Your apartment is just as cute as ever. Don't you just adore it?"

"No. I'm moving."

"Why, what's come over you?"

"An opera singer."

Gushing Appreciation

"O John, dear, how kind of you to bring me this dear little monkey! How thoughtful you are! But—but it's just like you!"

Family Tree Preserver

Mrs. Newrich employed me to look up her family tree, and I've got to inform her that one of her relatives was electrocuted.

Just write that he occupied the chair of applied electricity at one of our public institutions.

Chop Chop

What does your father do to make a living, little boy?

He chops down trees.

And what does he do after he chops them down?

He chops them up!

Terrible Experience

It must be wonderful to be a parachute jumper. I suppose you've had some terrible experiences.

Yes, miss, terrible. Why, once I came down where there was a sign, "Keep Off the Grass."

Competition

Pretty Girl: "It must have taken a lot of courage to rescue me as you did."

Fireman: "Yeh. Had to knock down three other guys who were trying to get to you first."

Candid Criticism

"How do you feel Johnny is coming along with his piano lessons, Professor? What does he do best?"

"Well, Madam, Johnny has a very nice way of closing the lid."

Little Brother

"Hi, Billy."

"Hi," said the brat.

"Is your sister expecting me?"

"Yeah."

"How do you know?"

"She's gone out."

Out of Turn

I never can find a thing around this house. I certainly would like to know where my hat is.

So would I; you weren't wearing it when you came home last night.

Not the Same

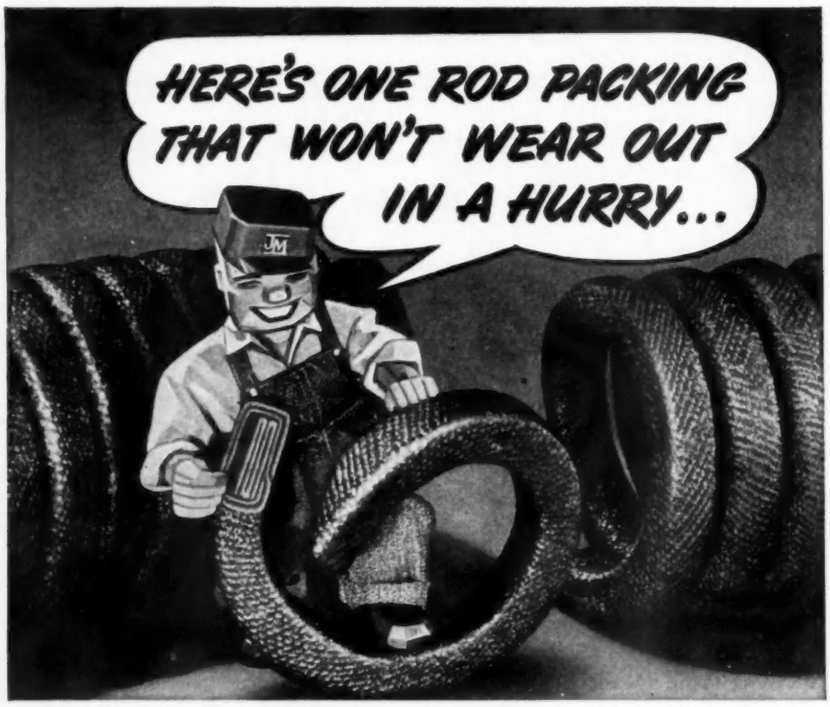
Haughty Housewife: "Aren't you the same man I gave a piece of mince pie last month?"

Tramp: "No, mum' I ain't; and wot's more, the doctor says I never will be."

Dood It

You were a very tidy boy not to throw your orange peel on the floor of the bus. Where did you put it?

In the pocket of the man next to me.



KEARSARGE ROD PACKING

For continued efficient service against high-pressure steam, you can't beat this rugged rod and plunger packing. Its unique folded construction provides natural resiliency and forms a reservoir for the preserving lubricant, keeping the packing pliable in service. Extra resiliency is provided by a red rubber expansion back in the center block. And a double wrapping of asbestos cloth assures resistance to wear. You can use Kearsarge Rod Packing, and other materials in the complete J-M line, to minimize equipment shutdowns ... save much of the expense caused by too-frequent *re*-packing.

For details, ask for a copy of the new J-M Packing Catalog. Johns-Manville, 22 E. 40th St., New York.

JM

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THERE'S A DISTRIBUTOR NEAR YOU

Notes for the Equipment Buyer and User

Plastic Tubing

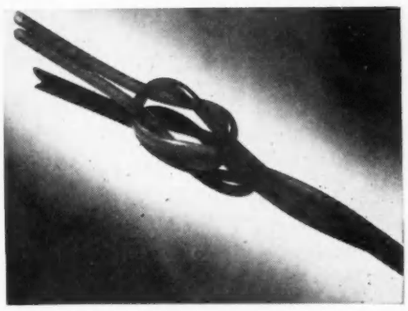
WARNER LEWIS COMPANY

Warner Lewis Company, Whittier Station, Tulsa, is distributing Saran, which is now being fabricated into a flexible, semi-transparent tubing, resistant to water, gasoline, oils, chemicals and solvents. The tubing is being substituted in many instances for copper, nickel, stainless steel and ceramics.

The material from which this tubing is made is a vinylidene chloride resin developed by The Dow Chemical Company.

This thermoplastic is entirely unaffected by water and the only solvents exhibiting any effect on the plastic are the high oxygen-bearing oxides and ethers and certain of the chlorinated aromatic hydrocarbons. The extreme resistance of the resin to most acids and metallic alkalies, concentrated or dilute, at room temperatures permits industrial applications heretofore thought to be impossible.

Saran Tubing is available in sizes from ⅛- to ⅜-inch o.d., in wall thicknesses of .031- and .062-inch. Larger sizes and greater wall thicknesses will be available soon. The tubing will accommodate Parker standard tube couplings, S.A.E., and other flare type fittings. At normal room temperatures, the flaring can be done with standard copper tubing flaring tool. Any necessary cuttings or trimming can be done with a knife, scissors or file. Straight flare-type fittings made from Saran are now available. Tees, ells and other fittings are now in the process of manufacture. Saran has good machining qualities and will be available in round and hex stock.



Saran Tubing

The ¼-inch o.d. size in wall thicknesses of .031- and 0.62-inch has bursting pressure of 630 and 1840 pounds, respectively.

Saran tubing is recommended for continuous temperatures to 150° F., although a ¼-inch o.d. tube with .035-inch wall did not bulge or rupture when heated to 212° F. and subjected to 200 p.s.i. air pressure for 13 hours.

In demonstrating Saran's resistance to fatigue, tubing was flexed through an angle of 15°, 1750 times per minute for 2,500,000 cycles without a failure.

Saran is a poor conductor of heat, compared to metals, and can be used as electrical insulation.

Listed below are some of the suggested uses of this tubing: oil lines for motors having central oil systems, gasoline lines for automobiles, tubing for recording devices and gauges, siphon tubes for acids, alkalies and organic materials, lead-in pipes for corrosive fluids, atomizer tubes, refrigerant transfer, electrical insulation, sight tubes, humidifier supply lines, air and water lines.

Henry H. Paris Buys Volcano Burner Company

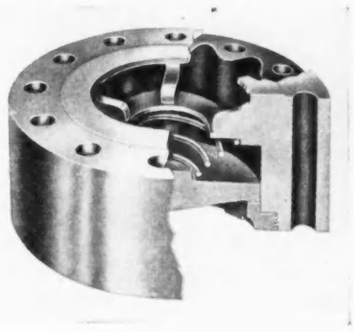
Henry H. Paris, 1121 Rothwell Street, Houston, Texas, has announced he has purchased the entire assets, name, and patents of the Volcano Burner Company, now located at 1808 Lyons Avenue, Houston. The company will continue to manufacture all types of Volcano products at the present address.

Paris announced the firm will expand manufacturing facilities soon to include industrial and refinery burners. The burners are made in many types and styles under trade names of Gulf State, Superior, and Bear Cat.

Check Valve

WILLIAMS GAUGE COMPANY

Williams Gauge Company, 2048 Pennsylvania Avenue, Pittsburgh, Pennsylvania, announces an improved line of check valves which are furnished in a wide variety of metals and sizes. Designated as the Williams-Hager flanged silent check valves, they are manufactured of bronze, cast iron, steel, stainless and monel metal for pressures varying from 150 to 2500 pounds. Sizes range from 1 to 20 inches inclusive.



Williams Check Valve

Simple, compact and rugged in design, Williams-Hager check valves have but two parts subject to wear—the valve disc and seat. Both are easily removable and renewable, and the valve can be reseated without special tools. The spring ring is built as an integral part of the body.

Seismograph Service Taking Mud Analysis Unit to Venezuela

Seismograph Service Corporation, Tulsa, soon will have available in Venezuela a drilling mud analysis unit for logging wells while drilling.

This method is based on the principle that fluids and gases in the pore spaces of the cylindrical core drilled up by the bit are picked up and transported to the surface by the circulating drilling mud. If then, instruments capable of detecting these substances are provided with a means of determining their depth of origin, the well may be logged as drilling progresses.

The logging unit contains these instruments capable of detecting and automatically recording the presence and nature of gases and fluids in the drilling mud. The recorder also automatically records the drilling rate in feet per hour, the actual points of weight applied on the bit, and the speed of the rig slush pump in strokes per minute.

The benefit derived from this logging method is the continuous logging of the

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Seismograph Service Mud Analysis Unit for Well Logging

well during drilling, without materially retarding drilling progress and gives information regarding the fluid contents of porous formations, their depth, relative productivity, apparent porosity, thickness, and hardness. These data are combined to give a detailed picture from which may be derived subsurface correlations.

Mud logging equipment for this service is manufactured by Engineering Laboratories, Inc. In the past several years approximately 600 wells have been logged by this method in most fields of the United States under the name of Baroid Well Logging Service.

Charles B. Johnson, who did the field development work on this method will represent Seismograph Service Corporation in Venezuela. He was formerly associated with J. T. Hayward of Barnsdall Research Corporation.

Hard-Facing Rods

AIR REDUCTION SALES COMPANY

Air Reduction Sales Company, 60 East 42 Street, New York, has announced that Stoody Company has developed two new hard-faced alloys which are being marketed under the trade names of Stoodite K and Stoody Self-Hardening K.

Stoodite K is a cast hard-facing rod consisting principally of molybdenum, tungsten, manganese, silicon, carbon, and iron. It is supplied both in bare form for oxyacetylene application and in coated form for d-c electric application. It is available in five rod sizes: 1/8-, 3/16-, 1/4-, 5/16-, and 3/8-inch, and in rod lengths of 14 inches. Deposits of Stoodite K average 54-58 on the Rockwell C scale, depending on the type of parent metal and the method of application. Stoodite K forms smooth, dense deposits free from porosity and shrinkage cracks. These deposits will withstand considerable pressure and impact if properly supported, and they offer excellent resistance to all types of abrasive wear.

Stoody Self-Hardening K is composed principally of molybdenum, manganese, silicon, carbon, vanadium, and iron, and is made in the form of tubes with the mixed alloys on the inside. This rod is supplied bare for oxyacetylene application and bare and coated for d-c electric application. It is available in three rod sizes: 1/8-, 3/16-, and 1/4-inch. Electric rods are 14 inches in length, acetyelene rods 28 inches.

Reel Jack

HARNISCHFEGER CORPORATION

The Harnischfeger Corporation, 4523 West National Avenue, Milwaukee, Wisconsin, has announced a simple adaptation of the ordinary model 310 Simplex Jack which is being successfully used in the company's warehouse for spooling wire rope. The makers of Simplex have a line of 13 reel jacks, but this is said to be a handy man's way of cutting a corner.

A 1-inch x 1-inch steel bar has been welded to the toe lift of the jack. This carries a bracket extension which in turn supports two rollers which carry the 3-inch pipe spindle. The bracket extension is about 6 inches and was necessary because the toe of the jack was not long enough to accommodate the rollers or size of pipe spindle necessary for large cable reels. It was also necessary to weld an extension to the base of the jack because the center of gravity had been shiftd forward. Without it, pulling the cable from the reel would cause the jack to topple over.

The spindle is provided with a flange which in practice keeps the side of the reel opposite a fraction of an inch higher. This keeps the reel properly centralized when unspooling cable. Small flanges or collars are also provided for both sides of the rollers. Without these flanges the reel, unless absolutely level, would drift to the lower side and come in contact with the jack, preventing turning.

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Complete Evaluation of Crude Oils
Long Distance 267, Box 132, Houston, Tex.

THE FORT WORTH LABORATORIES
Analysis of oil field brines, cores, gas, oil and minerals. Field gas testing. R. H. Fash, Vice President; Long Distance 138. 823½ Monroe Street, Fort Worth, Texas.

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Jack DeForrest, Mgr.
WHITE-PLAZA HOTELS
JACK WHITE, Operator

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